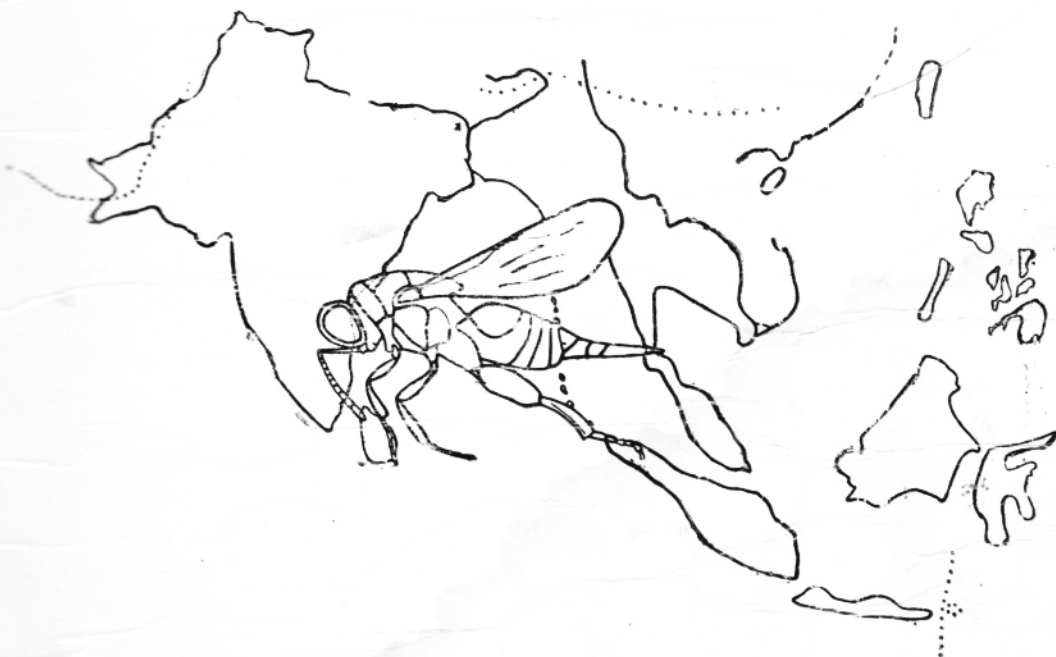


ZOOLOGICAL MONOGRAPH,

ORIENTAL CHALCIDIDAE

(HYMENOPTERA : CHALCIDOIDEA)

T. C. NARENDRAN



DEPARTMENT OF ZOOLOGY, UNIVERSITY OF CALICUT
KERALA, INDIA-673 635

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DEDICATION

Dedicated		Dedicated
to		to
my teacher Dr. Z. Bouček,	&	Dr.E.E. Grissell,
London		Washington, D.C.
for his guidance which has always		for his sincere co-operation
led me in my research over		and encouragement in my
the years.		research.

PREFACE

This monograph comprises the results of my investigations on the Systematic Revision of the Oriental fauna of Chalcididae (Hymenoptera : Chalcidoidea). It contains descriptions of 4 new genera, 88 new species, revisions of 37 known genera and 242 known species. It also contains 78 new synonyms discovered and some new combinations. All the known synonyms are also included under each genus and species. Dichotomous keys to Oriental genera and species are also provided. A host-parasite list and index to species are provided at the end of the Monograph.

Almost all relevant primary types of known species have been examined and studied (except in a few cases where the types could not be traced). Approximately thirty thousand specimens from all over Oriental Region were studied by me. While preparing keys to Oriental species I have given keys to females only in several genera since the taxonomy of Chalcididae is largely based on female specimens and since many of the males are unknown in the case of several species.

Although major contributions to our knowledge of Oriental Chalcididae have been made by Masi (1916-1947), Boucek (1949-1988), Joseph, Narendran & Joy (1973), Boucek and Narendran (1981), it is for the first time that a monograph on the genera and species of of an entire zoogeographical realm namely the Oriental Region is prepared. In this work I have included under Oriental Region countries mentioned by Darlington (1957). In some cases I have included some extra limital taxa of border areas too thinking that they may be found in the Oriental Region later.

This work is the result of my research for the last one decade. However the major part of this work was made possible by a grant financed by the Agricultural Research Service, United States Department of Agriculture, Washington, D.C, (USA) for a P.L. 480 Rese-

arch Project on Chalcididae (The project was approved by the Ministry of Agriculture. Government of India through ICAR).

If I have achieved anything in this work, it is only due to the great help and co-operation rendered to me by several scientists in and outside India. The valuable suggestions and help given by my friend and co-operating scientist of the P.L. 480 Research Project, Dr. E.E. Grissell, Systematic Entomology Laboratory, U.S. Department of Agriculture, Washington, D.C. at all stages of this work is gratefully acknowledged. I record here my grateful thanks to my teacher Dr. Z. Boucek, CAB International Institute, London for giving me all guidance in my work. I thank the following scientists for cooperating in my research by sending types or other specimens for my study: Dr. Gary A.P. Gibson (Ottawa), Dr. John S. Noyes, (London). Dr. C.van Achterberg (Leiden), Dr. Gordon M. Nishida (Hawaii), Dr. Henry Townes (Gainesville), Dr. Ian Naumann (Canberra City), Dr. H.J. Muller (Eberswalde), Dr. Roberto Poggi (Genova), Dr. K.J. Hedqvist (Stockholm), Dr. Jezek (Prague), Dr. J. Mazek (Prague), Dr. J.R. Steffan (Paris), Dr. E.C. Dahms (Brisbane), Dr. Rudolf Abraham (Hamburg) Dr. M. Favreau (New York), Dr. W.J. Pulawski (California), Dr. C.O. Toole (Oxford), Dr. C. Darling (Ontario), Dr. Borge Peterson (Copenhagen), Dr. J. Oehlke (Eberswalde), Dr. Per Inge Persson (Stockholm), Dr. F. Koch (Berlin), Dr. M.J. Chacko (Bangalore), Dr. S.K. Gupta (Calcutta), Dr. Viraktamath (Bangalore), Dr. K. Mohandas (Peechi), Dr. M.G. Ramdas Menon (Trichur,) Dr. M.S. Mani (Madras), Dr. S.I. Farooqi (New Delhi), Dr. M. Hayat (Aligarh). Dr. M.M. Agarwal (Aligarh), Dr. P. J. Joy (Trichur).

I thank the Royal Society, London for providing me with a grant for a study stay at the British Museum (Natural History), London before I undertook the P.L. 480 Research Project and this enabled me to initiate and undertake the Revision of the Oriental Chalcididae. The fellowship given by Smithsonian Institution to visit United States National Museum of Natural History, Washington, D.C. for a study stay is also gratefully acknowledged.

I take this opportunity to record my thanks to Mr. T.N. Jayachandran, former Vice-Chancellor of Calicut University, Dr. S. Balaraman, Registrar, University of Calicut, Dr. K.J. Joseph, former Head of the Dept of Zoology, University of Calicut and Dr. U.V.K. Mohamed, Head of the Dept. of Zoology, University of Calicut for their kind cooperation in the administrative part of the P.L. 480 Research Project.

I am deeply indebted to my doctoral research student Miss Thresiamma Verghese for helping me considerably at every stage of my work on this Monograph. But for her sincere and valuable help it would not have been possible for me to complete this Monograph in the present form. I have pleasure to acknowledge the help rendered by my other students viz. Mr. S. Amareswara Rao, Mr. Titus T. Jacob, Mr. C.A. Jayaprakash, Mr. P.M. Sureshan, Mr. R. Padmasenan, Miss K. Surekha, Mr. P.K. Sumodan, and Mr. K. Anil. I thank Mr. P. Aboobacker and Mr. K. Komu for various sorts of help in my work. Last but not the least, I express my deep appreciation to my family for tolerating my rantings and ravings and evenings and holidays away from home associated with this research work.

It is hoped that this work will facilitate identification of most of the Oriental species and genera of Chalcididae and also stimulate further research on this economically important and interesting group of insects which play an important role in the natural control of many pest species.

INTRODUCTION

The family Chalcididae (s. str.) comprises medium to large Chalcids which vary from 1.5 mm to 20 mm in length. Chalcididae is the largest among the Chalcidoid families with swollen hind femora. Many species of this family are important primary parasites of several insect pests of agricultural importance. In spite of this, our knowledge on the biosystematics of these insects has been poor, particularly in the Oriental Region where losses suffered to crops by insect pests are often enormous. The object of the present Monograph on Oriental species of Chalcididae has therefore been to bring together information on the systematics of various species and genera of Chalcidids inhabiting in this region and to give keys to their identification.

Historical resume: The study of chalcidids may be said to have begun well before 200 years ago when Linnaeus discovered and reported a few species such as *Spex sispes* (*Chalcis sispes*), *Vespa minuta* (*Brachymeria minuta*) etc. Linnaeus (1767) was followed by Fabricius (1787) who was the first to coin the name 'Chalcid' from which the present scientific name for the Chalcidoid wasps is derived. Later Latreille (1817) formerly established the name Chalcidites which was later amended to Chalcididae. Ashmead (1897, 1904a) raised it to superfamily level. Walker (1834) was the first to call it Chalcididae in the present sense. Later the names of Westwood, Della Torre, Spinola, Dalman, Saunders Motschulsky, Foerster, Cresson, Klug and Kirby stand out prominent among the early students of this group. Since the monumental work on the classification of Chalcidoidea by Ashmead (1904a) our knowledge of the family has been greatly enhanced by the studies of Cameron, Crawford, Schmitz, Waterston, Girault, Gahan, Ruschka and Masi. During the recent years Boucek (World fauna) Steffan (Palearctic and Ethiopian fauna), Burks (Nearctic fauna), Grissell (North American fauna), Erdos (Hungarian fauna), Habu (Japanese fauna), Nikolskaya (Russian fauna) Mani and his students (Indian fauna) and Narendran (Oriental fauna) have contributed to the study of Chalcididae.

Classification: The family Chalcididae is divided into the following five subfamilies (Boucek 1988)

Subfamily	Tribe
Chalcidinae.....	Brachymeriini, Cratocentriini Phasganophorini, Chalcidini
Haltichellinae.....	Haltichellini, Hybothoracini, Tropimeridini.
Epitraninae	
Dirhininae	Dirhinini, Aplorhinini.
Smicromorphinae	

Classification: The family Chalcididae is divided into the following five subfamilies (Boucek 1988)

Subfamily	Tribe
Chalcidinae.....	Brachymeriini, Cratocentriini Phasganophorini, Chalcidini
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Epitraninae	
Dirhininae	Dirhinini, Aplorhinini.
Smicromorphinae	

TERMS AND MEASUREMENTS

Head (Figs. 1-3). The maximum width of head has been measured from front view (Fig. 1) and dorsal view (Fig. 2, when compared with thorax.) Maximum length of head has been measured from top to anterior margin of labrum; if labrum is not seen from dorsal view then upto anterior margin of clypeus; if both labrum and clypeal margin are not seen from anterior view then down to the anterior margin of the visible part of frons. Postorbital carinae and genotemporal regions are shown in Fig. 3. The POL and OOL are shown in Fig. 2. The antennae is as shown in Fig. 4.

Thorax. The maximum length and width are taken from dorsal side (Fig. 5.). Length is measured from the apex of pronotal neck to posterior end of propodeum. The maximum width of thorax included tegulae also. The forewing veins are shown in Fig 6. Hind leg is as shown in Fig 7.

Gaster (Fig. 8). The maximum length is measured from dorsal side, from basal margin of petiole (if petiole is visible from dorsal, side) to the apex of ovipositor sheath except otherwise specified.

ABBREVIATIONS

- ✓ AEI : American Entomological Institute, Gainesville, Florida, U.S.A.
- BMNH : British Museum (Natural History) London, U.K.
- / BSRI : Biosystematic Research Institute, Ottawa, Ontario, Canada.
- BBM : Bernice P. Bishop Museum, Honolulu, Hawaii, U.S.A.
- DEI : Institute for Pflanzenschutzforschung, Eberswalde, Germany (GDR)
- / DZCU : Department of Zoology Calicut University, India.

- EIHU : Entomological Institute Hokkaido University Sapporo, Japan.
- ELKU : Entomological laboratory Kyushu University, Fukuoka, Japan.
- EUM : Entomological Laboratory, College of Agriculture Ehime University, Matsuyama, Japan.
- FRI : Forest Research Institute, Dehra Dun, India.
- HDEO : Hope Department of Entomology, University Museum, Oxford, England.
- IARI : Division of Entomology, Indian Agricultural Research Institute, New Delhi, India.
- MCSG : Museo Civico di Storia Naturale, Genova, Italy.
- MHNG : Museum d'Histoire Naturelle, Geneve, Switzerland.
- MNHN : Museum National de Histoire Naturelle, Paris, France.
- NIAS : National Institute of Agricultural Sciences, Nishigahara, Tokyo, Japan.
- NM : Entomologicke oddeleni, Narodni, Museum, Praha, CSSR
- NMV : Naturhistorisches Museum, Vienna, Austria.
- NRS : Naturhistoriska Riksmuseet, Stockholm, Sweden.
- QMB : Queensland Museum, Brisbane, Australia.
- RNHL : Rijksmuseum van Natuurlijke Historie, Leiden, Netherlands.
- TMB : Termesztudományi Múzeum, Budapest, Hungary.
- UC : University of Colombo, Sri Lanka.
- USNM : United States National Museum of Natural History, Washington D.C., U.S.A.
- UZM : Universitets Zoologiska Museum, Copenhagen, Denmark.
- WADA : Western Australian Department of Agriculture, Perth.
- ZDAMU : Department of Zoology, Aligarh Muslim University, Aligarh, India.

- ZIASL : Zoological Institute, Academy of Sciences, Leningrad, USSR.
- ZMHU : Zoologisches Museum Der Humboldt Universitat Berlin, FDR.
- ZMMS : Moscow state University Museum, Moscow, USSR.
- ZMUKP : Zoological Museum, University of Karachi, Karachi, Pakistan.
- ZSI : Zoological Survey of India, Calcutta, India.
- F : Female
- M : Male

KEY TO GENERA OF ORIENTAL CHALCIDIDAE

1. Hind tibia almost straightly truncated at apex and with two spurs (Figs. 20, 29, 30), if apex with a curved spine (Fig. 147) then tibia without spurs at apex. (Haltichellinae).....2
- Hind tibia obliquely truncated at apex, forming a strong spine extended beyond insertion of tarsus (Figs. 211, 214, 270, 294, 381) between tip of spine and tarsus usually only one spur (often inconspicuous).....30
2. Marginal vein of forewing at the wing margin; postmarginal vein distinctly developed (occasionally short but often long); stigmal vein distinctly developed (Figs. 88, 92, 125) (Haltichellinii)3
- Marginal vein situated slightly removed from anterior margin; postmarginal vein lacking; stigmal vein usually rudimentary; body often sparsely punctured (Fig. 166).....15
3. Scutellum greatly bulged, almost semicircularly or pyramidally arched (Fig. 112) in side view and hind margin overhanging the frenum; mesoscutum highly convex, interocular protuberances present.....UGA Girault
- Scutellum and other characters not as above.....4

4. Scutellum prolonged posteriorly as in fig. 121; front tibia with a relatively long spur.....**TAINANIELLA** Masi
— Scutellum and tibia different.....5
5. Genotemporal margin concave malar area relatively long; head (Fig. 117) obliquely narrow below eyes with dense pubescence; sides of metanotum usually with an up-turned tooth on each side; lower frons produced forwards.....**RHYNCHOCHALCIS** Cameron
— Genotemporal margin and other characters different.....6
6. Tip of hind tibia with a characteristic outer spur, (Fig 138) and carina; clava long and narrowed towards (Fig. 140) the tip; fore tibia (Figs. 137,139,141) swollen; postscutellum with longitudinal rugae.....**TANYCORYPHUS** Cameron
— Tip of hind tibia and other characters different.....7
7. Hind tibia externally with an additional carina, at least in dorsal half, (Figs. 70, 144, 152).....8
— Hind tibia without an additional carina.....13
8. Pronotal collar in middle with a short median keel or tooth (Fig. 125) or a raised triangle (rarely weakly developed, but distinctly indicated), apex of scutellum in most, species distinctly produced, (in a few species emarginate) (Figs.122, 133)....**OXYCORYPHE** Kriechbaumer
— Pronotum with two median teeth or tubercles or without any teeth or tubercle, other characters partly or completely different.....9
9. Pronotum with two median tubercles; apex of scutellum not at all emarginate but slightly produced posteriorly. Hind femora with a distinct inner basal tooth.....10

- Pronotum without any tooth or tubercle or triangular area; scutellum may or may not emarginate.....11
- 10. Apices of hind tibia and tarsus swollen; ovipositor sheath peculiar (Fig. 144) with a distinct ventral tooth STHULAPADA gen. nov.
- Hind tarsus normally developed; ovipositor without a tooth but peculiarly turned upwards (Fig. 142) THRESIAELLA gen. nov.
- 11. Ventral margin of hind femur with a characteristic and prominent dent (Fig. 70) followed by a comb of teeth; first tergite of gaster without longitudinal carinae at base often with distinct microsculptures; antennal toruli located a little away from clypeus; apex of scutellum without large teeth (Usually with two short dents but occasionally entire or rounded)..... NEOCHALCIS Kirby
- Ventral margin of hind femur without such a dent; scutellum. usually emarginate, teeth often prominent; other characters partly or completely different.....12
- 12. Base of first tergite with atleast a pair of carinae; often supplemented by additional strigae; apex of scutellum usually with well developed long teeth (Figs. 145, 149, 151); first tergite of gaster large HALTICHELLA Spinola
- Base of first tergite shorter than in the alternate, without carinae at base; head (Figs. 154, 157) and thorax stouter than in alternate, more densely pubescent NEOHALTICHELLA gen. nov.
- 13. Frons with a strong horse-shoe shaped carina, running from above, behind front ocellus along inner margin of eyes... ..14
- Frons without such a carina, if fine carinae present then they do not turn mesad dorsally behind front ocellus; base of first

- tergite of gaster with or without carina at base
 **HOCKERIA** Walker
14. Hind femur characteristically trilobed (Fig. 48) pronotal carina
 indistinct or restricted to sides only
 **KRIECHBAUMERELLA** Dalla Torre
- Pronotum regularly convex; hind femur either uni or bilobed
 or without distinct lobe; anterior pronotal carinae with paired
 strong or weak tubercles in the middle, these tubercles weak or
 indistinct in non-typical species
 **ANTROCEPHALUS** Kirby
15. Antennae inserted high, more than half length of scape above
 mouth level (Fig. 160); first tergite anteriorly with transverse
 crust and behind crust with many longitudinal striae, scutellum
 subglobose; its posterior part vertical; hind femur with sharp
 tooth in distal third, short comb behind the tooth (Fig. 161)
 and hind tibiae with additional extra carina. (Tropimeridini)..
 **TROPIMERIS** Steffan
- Antennae inserted very low at mouth level (Figs. 165, 203);
 other characters partly or completely different from above
 (Hybothoracini)16
16. Hind tibia with a characteristic plate like structure (Fig. 163)
 at apex ventrally; interocular space smooth and raised.....
 **BUCEKIA** Steffan
- Apex of hind tibia normal17
17. Gaster distinctly petiolate (extralimital).....
 **STENINVREIA** Boucek
- Gaster sessile, although sometimes narrow anteriorly; petiole
 not or hardly visible in dorsal view18
18. Hind femur with short comb of teeth, confined to distal half,
 the proximal broad tooth if present beyond middle of edge (Figs.
 165, 166, 168, 171).....19

- The comb of hind femur much longer than in the alternate 21
- 19. Hind tibia swollen towards apex (clavate) (Figs. 165, 166); first tergite of gaster with three to several carinae at base, apex of scutellum rounded not produced posteriorly; femoral comb of teeth mostly in distal third, strongly reduced.....
.....**STENINVREIA** Boucek
- Characters not as above, partly or completely different.....20
- 20. Apex of scutellum emarginate, pronotum, mesoscutum and scutellum very convex; hind femur with peculiar distal comb of teeth (Fig. 168) without a distinct proximal tooth; hind ocelli somewhat raised as in *Bucekia*, antennal club strikingly pointed (Fig. 167); hind tibia slender (not clavate); first tergite of gaster with three basal carinae and several striae (Fig. 169).....
.....**HAYATIELLA** gen. nov.
- Apex of scutellum round to acuminate at least slightly protruding over metanotum; hind femur with proximal tooth near middle (Fig. 171); hind ocelli not raised; hind tibia with a dorsal median carina or ridge beset with minute tubercle-like structures; first tergite of gaster with one to four carinae (Fig. 172); without striae as in alternate.....**NOTASPIDIUM** Dalla Torre
- 21. First tergite of gaster (composed of two fused tergites), with several strong longitudinal carinae (without median carinae); sides of propodeum straight and strongly converging; female antennae subclavate; forewing with two longitudinal bands, (extralimal) Australian.....**NEARRETOCERA** Girault
- Not as above, characters partly or completely different.....
..... 22
- 22. Apex of scutellum angulate, projecting over propodeum (Fig. 173); first two tergites of gaster fused, anteriorly with two submedian carinae and two sublateral carinae.....
.....**NOTASPIDIELLA** Boucek .

- Not as above, characters partly or completely different.....23

- 23. Basal tergite of gaster with raised cross carina and behind it at least several longitudinal carinae. (Fig. 174).....24
 - First tergite anteriorly with distinct basal fovea in the middle 25

- 24. First tergite anteriorly with three longitudinal carinae and on side, a little lower with another such carina, basal two tergites fused in some species (extralimital).....
 -**NIPPONCHALCIDIA** Habu
 - Almost whole surface of basal tergite covered with numerous raised longitudinal striae (Fig. 174) (extralimital).....
 -**IRICHOPHALCIDIA** Cameron

- 25. Antennal club with oblique segmentation (Fig. 195, 196, 197) with micropilosity on the ventral flat area, apex of scutellum bidentate.....**INDOINVENTIA** Roy & Farooqi
 - Antenna not as above, without micropilosity, scutellum may or may not be bidentate.....26

- 26. The two posterior corners of propodeum extended backwards as horns (Fig. 209).....**NEOHYPOTHORAX** Nikolskaya
 - Propodeum truncate or rounded without its corners extending backwards as above.....27

- 27. Temples extremely narrow (Fig. 204) vertex relatively thin, posterior border of pronotum with a row of minute and dense pubescence; apex of scutellum usually with two distinct minute teeth (weakly emarginate in *L. thresiae*).....
 - **LASIOCHALCIDIA** Masi
 - Characters not as above, partly or completely different.....
 - 28

28. Hind femur with a massive basal tooth (Figs. 185, 187) formed by several longitudinal rugae, apex of scutellum weakly emarginate or entire; first tergite of gaster weakly or strongly shagreened or aciculate; body usually with dense pubescence.....
.....PSILOCHALCIS Kieffer
- Hind femur without such a basal tooth as in the alternate; apex of scutellum always rounded; other characters partly or completely different29
29. Basal gastral tergite without any carinae
.....INVREIA Masi
- Base of gaster with two distinct carinae, delimiting the basal fovea on side (Figs. 190, 194).....
.....PROCONURA Dodd & Girault
30. Antennae nine segmented, distinct (Fig. 210); gaster usually narrow (Fig. 211), its petiole inserted far up on the propodeum; postmarginal vein absent. Smicromorphinae
.....SMICROMORPHA Girault
- Antennae much longer, with atleast eleven distinguishable segments; gaster attached at coxae, broad; postmarginal vein usually present.....31
31. Head with two projecting horns (Figs. 318, 320, 325, 331) gaster with petiole; ventral margin of hind femur with smoothly arched comb of teeth. Dirhininae.....
.....DIRHINUS Dalman
- Head without such horns.....32
32. Gaster with slender striate petiole, gaster (Figs. 341, 384, 382, 364) bulging ventrally; antennal toruli located (Figs. 351, 356, 360) very low on a shield protruding over mouth; scrobe virtually absent; marginal vein very long, stigmal rudimentary, postmarginal absent, Epitraninae.....
.....EPITRANUS Fab.

- Not as above, characters partly or completely different; Chalcidinae..... 33
- 33. Gaster distinctly petiolate; petiole distinctly longer than broad, propodeal spiracle elongate in almost vertical direction,..... Chalcidini..... 34
- Gaster sessile, petiole mostly concealed in dorsal view, propodeal spiracle elongate in oblique subhorizontal direction..... 35
- 34. Mid tibia with a distinct spur at apex; in female last sternite (Fig. 218) short and not produced posteriorly, last sternite in male not distinctly emarginate at apex, claws of male and female simple.....**SPILOCHALCIS** Thomson
- Mid tibia without a distinct spur at apex; in female last sternite (Fig. 215) produced posteriorly, in male distinctly emarginate at apex; claws of male bifid at apex.....**CHALCIS** Fabricius
- 35. Postmarginal vein much longer than marginal, usually more than twice the marginal, gastral tergites two to four strongly reduced and most part hidden under the large first tergite, gaster in female with long tail, Cratocentrini..... 36
- Postmarginal vein shorter than marginal, other characters different 37
- 36. Scapulae and axillae prominently convex; vertex without median raised teeth (Fig. 221), posterior border of pronotum not convex.....**MEGACHALCIS** Cameron
- Scapulae and axillae not very convex; vertex with a pair of raised teeth (Fig. 225).....**CRATOCENTRUS** Cameron
- 37. Frontogenal sulcus (malar suture) below eyes distinct; usually carinate; postmarginal vein often longer than short stigmal. Brachymerinii.....**BRACHYMERIA** Westwood

- Frontogenal sulcus (malar suture) indistinct; postmarginal not longer than stigmal, at the most subequal to stigmal, Phasgonophorini38
- 38. Antennae attached at the level of or a little below the level of ventral margin of eyes; anellus relatively shorter; generally six gastral tergites visible before epipygium; front ocellus not usually enclosed in a triangular area.....39
 - Antennae attached fairly above the level of ventral margin of eyes; gaster usually with five tergites clearly visible before epipygium; anellus rather long; front ocellus enclosed in a triangular area; apical area of scutellum with quadrate or subquadrate hollow depression.....40
- 39. Lower face with conspicuous raised, X shaped structure (Fig. 251); frons flat, at eye margin delimited by the preorbital carinae; hind femur with a large basal tooth.....
 -**TRIGONURELLA** Boucek
 - Lower face (Fig. 233) regularly punctate; frons convex, without strong preorbital carinae; hind femora without a broad tooth as in the alternate.....
 -**TRIGONURA** Siche
- 40. Area below antennal toruli densely punctate, with a narrow vertical carina or ridge in middle (Figs. 253, 261); clypeus dull, receding from horizontal upper edge to labrum and mouth; scutellum often reduced into double stout lamina; thorax often broad; epipygium and ovipositor sheath relatively long (Figs 270, 272), length more than 6 mm (as long as 0.4x of gastral body).....
 -**MEGALOCOLUS** Kirby
 - Area below antennal toruli (Fig. 273) flat and with an unpitted median area; flat clypeus on lower margin with broad subangulate tooth; scutellum not produced at apex; epipygium (Fig. 274) and ovipositor sheath not so long as above, length 5.5 mm.....**STENOCHALCIS** Masi

1. Genus **ANTROCEPHALUS** Kirby

(Figs. 9 -45, 392-396)

Antrocephalus Kirby 1883 : 54, 63, Type species *Halticella fascicornis* Walker by original designation.

The known synonyms of *Antrocephalus* are: *Coelochalcis* Cameron (1904); *Dilla* Strand (1911), *Stomatoceroides* Girault (1913b) *Metarretocera* Girault (1927), *Tainania* Masi (1929), *Sabatiella* Masi (1929), *Stomatocerella* Girault (1930), *Uxa* Girault (1930), *Dillisca* Ghesquiere (1946) and *Uda* Girault (1930)

This genus is perhaps the most difficult one among Chalcididae to study taxonomically. This is because members of this genus are in the process of evolution and so many species come very close to genera like *Hockeria* and also show wide variation in structure. Boucek (1988) have discussed in detail the variation as well as the various synonymy involved in this genus. The members of this genus are parasitic on Lepidoptera. The genus is found in Asia, Europe; Australia and South America.

KEY TO ORIENTAL SPECIES OF *ANTROCEPHALUS* KIRBY

1. Hind femur with an inner basal tooth (Fig. 12). Preorbital carinae unite with carinae on outer side of antennal sclerites (Fig. 9). Scutellum with a median longitudinal fovea..... 2
- Hind femur without an inner basal tooth; other characters partly or wholly different.....3
2. Body black; postmarginal distinctly longer than (1.25 to 1.5x) marginal; propodeum with (Fig. 10) submedian, accessorial and sublateral carinae; lateral costae with reflexed blunt projection behind spiracles.....**HAKONENSIS** (Ash.)

- Legs rufous; gaster rufous or black; postmarginal subequal to marginal or shorter than marginal; never longer than marginal; propodeum (Fig. 11) with distinct lateral teeth... .. **MITYS** (Walker)
- 3. Gaster with three carinae at base of first gastral tergite (Fig. 14)... ..4
- Gaster with two carinae or no carinae at all... .. 6
- 4. Gena with a deep furrow (Fig. 13) between eyes and postmarginal carina; apex of scutellum weakly bilobed... .. **BICOLOR** (Masi)
- Gena without such a deep furrow between eyes and postorbital carina... .. 5
- 5. Preorbital carina distinctly raised; propodeum not flat, without triangular submedian carinae; apex of scutellum with two sharp teeth... ..**ABUI** sp. nov.
- Preorbital carina not as above, propodeum almost flat with somewhat triangular submedian carinae, (Fig. 17); hind tibia swollen distally; apex of scutellum weakly bilobed... ..**THRESIAE** sp. nov.
- 6. Hind femur with a characteristic dent as in figure 19; basal gastral tergite without distinct carinae at base (with a pit only)**BREVIDENTATA** R. & F.
- Hind femur otherwise; basal gastral tergite may or may not with a pair of distinct carina... ..7
- 7. Gaster with basal carinae on first tergite distinct... ..8.
- Gaster with basal carinae on first tergite indistinct (or at the most two extremely short ridge in the form of subtubercles at base... .. 27.

8. Postorbital carinae well developed; genotemporal furrow indistinct, if distinct then very shallow.....9
 - Postorbital carinae indistinct, if distinct then not well developed; genotemporal furrow usually deep (except in *A. ryukyuensis* Habu).....11
9. Pronotum with distinct anterior carinae forming distinct prominent tubercles in middle; hind coxa without a basal tooth or carina on dorsal side, hind femur as in figure 20**PEECHIENSIS** sp. nov.
 - Pronotum without prominent tubercles and anterior carinae (at the most the carinae are only slightly indicated); hind coxa with a basal tooth on dorsal side.....10
10. Thoracic notum provided with very large and shiny interstices, extremely minute pits (Fig. 21); pubescence on body and wings golden yellow; forewing with postmarginal a trifle more than one and one-fourth marginal; gaster with basal carinae distinctly longer than width between it.....**NITIDUS** sp. nov.
 - Thoracic notum with [close pits, interstices narrow, pubescence on body and forewing not [golden yellow; forewing with postmarginal less than one and one-fourth marginal; gaster with basal carinae not distinctly longer than width between them.....**DECIPIENS** (Masi)
11. Genotemporal furrow not distinct, if distinct [not deep, very shallow;.....**RYUKYUENSIS** Habu
 - Genotemporal furrow distinct, usually deep; (in *A. scutellatus* upper part of furrow only deep).....12
12. Carinae at base of first gastral tergite atleast a minimum of one-fourth as long as first tergite or much longer than that13.
 - Carina at base of first gastral tergite much shorter than one and one-fourth as long as first tergite.....15.

13. First gastral tergite very long, more than half of gaster (Fig. 22); scutellum invariably with a median carina which often extends to mesoscutum.....**CARINIASPIS** (Cameron)
 — Not as above.....14.
14. Scutellum convex (Fig. 23), propodeum fairly declined posteriorly; basal gastral carinae of female shorter than that of male**JAPONICUS** (Masi)
 — Scutellum not as convex as above (Fig. 24); propodeum subparallel; basal carinae of female almost as long as that of male **CARINICEPS** (Cameron).
15. Postmarginal vein approximately one and one-fourth to one and half times as long as marginal vein.....16.
 — Postmarginal as long as marginal or distinctly less than marginal or at the most subequal to marginal.....22.
16. Gaster distinctly shorter than thorax (49:60); forewing with two brown patches; head as in figure 25; hind tarsus very thick **TOWNESI** sp. nov.
 — Not as above... ..17
17. Gaster (Fig. 26) length equal to thorax or a trifle longer than thorax; apex of scutellum weakly and broadly emarginate; POL less than five times OOL; postmarginal less than one and half times marginal; hind femora black with base and apex red, with distinct distal lobe; forewing with brown patch near marginal**ACHERBERGI** sp. nov.
 — Gaster distinctly longer than thorax; other combination of characters partly or wholly different.....18
18. Scrobe smooth and shiny, not striated; interstices on mesoscutum and scutellum very much wider than two to six times the diameter of pits (or more wider); hind femora red (extra limital)**BOUCEKI** sp. nov.

- Not as above.....19.
- 19. Hind femur long (Fig. 29) with outer ventral margin with a long row of teeth and median depression; apex of scutellum deeply emarginate (Fig. 28).....20.
- Hind femur not as above; apex of scutellum not as above....
.....21
- 20. Hind femur with the depression separating distant and proximal lobe prominent (Fig. 29), interstices on pronotum and anterior part of mesoscutum smooth and shining, not rugulose; outer side of hind femur with distinct pits; hind femur usually black with base and apex red; forewing with golden pubescence.....
.....**ATULYUS** sp. nov.
- Hind femur (Fig. 30) with the depression separating proximal and distal lobe not so long as above; interstices on pronotum and anterior part of mesoscutum rugulose; forewing without golden pubescence; hind femora red.....
.....**NASUTA** (Holmg)
- 21. Hind femur red (Fig. 31) its length distinctly less than twice its maximum width; apex of scutellum bilobed; eyes moderately pubescent**PHAEOSPILUS** Waterston
- Hind femur black with base and apex red, its length more than twice its maximum width (Fig. 32), apex of scutellum not bilobed but emarginate; eyes not pubescent.....
.....**VALIDICORNIS** (Holmg)
- 22. First gastral tergite distinctly emarginate; POL three times OOL; propodeum with distinct submedian, accessory and sub-lateral carinae; postorbital carinae and gaster as in figure 33.
.....**CEYLONICUS** sp. nov.
- First gastral tergite not emarginate; other combination of characters partly or wholly different23.

23. Basal carinae of gaster diverging posteriorly (Fig. 34); scutellum with a smooth median ridge; anterior carinae of pronotum wavy**SCUTELLATUS** sp. nov.
— Characters not as above.....24.
24. Thoracic notum with pits extremely smaller and interstices more than the diameter of pits (Fig. 35), smooth and shiny; apex of scutellum as in figure 35.....**DISTINCTUS** sp. nov.
— Characters not as above... ..25.
25. Head in profile with a sharp angle in front of eyes (Fig. 36); hind femur with a long row of teeth occupying a trifle less than three-fourth outer ventral margin from apex to base; POL five times OOL..... **FASCICORNIS** (Walker)
— Characters not as above.....26.
26. Gaster acuminate; hind femora usually red; genotemporal furrow deep along posterior margin..... **DIVIDENS** (Walker)
— Gaster subglobose or not acuminate; hind femur black with base and apex red; genotemporal furrow deep on dorsal side**BREVIGASTER** Masi
27. Gaster (excluding epipygium and terebra) more than four or five times the length of epipygium or longer.....28.
— Gaster less than one and half times length of epipygium... ..32.
28. Preorbital carinae joins distinctly with auricular carinae (similar to Fig. 9); apex of scutellum with a thin split space between the lobes (Fig. 37)**LUGUBRIS** (Walker)
— Characters not as above.....29
29. Apex of scutellum deeply incised as in figure 38; POL less than three and half times OOL.....**NICUS** sp. nov.

- Characters not as above.....30
- 30. Pronotum without carinae and tubercles; scutellum with a middle fovea; gaster distinctly longer than thorax, parasitic on *Galleria mellonella* L..... **GALLERIAE** S.
- Characters not as above.....31
- 31. Forewing with two brown or blackish infuscations... ..
..... **MACULIPENNIS** Cameron
- Forewing with only one infuscation near marginal vein.....
.....**NIGRUS** (Masi)
- 32. Gaster (Fig. 39) (excluding epipygium and terebra) less than one and half times length of epipygium; forewing hyaline without any infuscation; genotemporal furrow indistinct.....
.....**HYP SIPHYLAE** sp. nov.
- Gaster more than two and half times or three times length of epipygium; forewing with an infuscation adjoining marginal; genotemporal furrow distinct33
- 33. Maximum length of epipygium when measured from dorsal side about one and one-third median length of sixth tergite; apex of scutellum distinctly bilobed (Fig. 40); POL more than 5 times OOL; hind femur as in figure 41.....
.....**GRISSELLI** sp. nov.
- Maximum length of epipygium more than one and one-third times the median length of sixth tergite (when measured from dorsal side); POL a little less than five times OOL.....34
- 34. Apex of scutellum as in figure 42; forewing without any brownish or blackish infuscation beyond postmarginal; hind femur as in figure 43; postmarginal more than 1.5 x marginal.....
.....**ACUTIVENTRIS** (Masi)
- Apex of scutellum as in figure 44; forewing with two brown patches, one below parastigma and other beyond post-

marginal: hind femur as in figure 45; postmarginal less than 1.5 x marginal.....ATRATUS Masi

Species unplaced in the key (for want of details):

1. *Antrocephalus indicus* Husain & Agarwal
2. *Stomatoceroideus indicus* Mani

1. *Antrocephalus hakonensis* (Ashmead)

(Figs . 9 & 10)

Stomatoceras hakonensis Ashmead 1904b: 148 F. JAPAN: Hakone (USNM) (examined)

Stomatoceras sulcatiscutellum Girault 1917: 9, F. Lectotype; India: Coimbatore (USNM) (examined) **syn. nov.**

Tainania dispar Masi 1933: 3, Lectotype; M.(here selected) Taiwan; Kankau (MCSG) (examined) **syn. nov.**

As pointed out by me in one of my earlier papers (1985a) I could confirm (after examining the relevant types) that *Stomatoceras sulcatiscutellum* is a synonym of *hakonensis*. I also examined the Lectotype male of *Tainania dispar* and found it to be the same as *hakonensis*. *Antrocephalus renalis* Waterston (Type examined) is a known synonym (Narendran 1985a,1986) of *hakonensis*.

This species is characterized by having the preorbital carinae joining with auricular carinae (Fig. 9); scutellum with a deep longitudinal fovea, apex emarginate, hind femur with an inner basal tooth. Detailed redescription of this species are given by Habu (1960) and Narendran (1977).

Host: Opisina arenosella Walker (Oecophoridae), *Contheyla rotunda* Habu (Limacodidae), *Hypsipyla robusta* (M) (Pyralidae), *Tirathaba* spp.(Pyralidae).

Distribution: Indian subcontinent, Taiwan and Japan.

Materials examined: Apart from the types innumerable specimens, collected from the pupae of *Opisina arenosella* Walker in Kerala.

2. *Antrocephalus mitys* (Walker)

(Figs. 11,12)

Halticella mitys Walker 1846a : 81, F. MAURITIUS (BMNH) (examined).

Chalcis Pandens Walker 1860 : 357, F. SRI LANKA, (BMNH) (examined) **syn. nov.**

Stomatocera sulcata Ashmead 1900 : 401, M. PHILIPPINES Manila, (USNM no. 8954) (examined), **syn. nov.**

Antrocephalus humilis Waterston 1922 : 22, F. INDIA, Dehra Dun (BMNH) (examined) **syn. nov.**

Antrocephalus vitatus Husain & Agarwal 1982 a : 327, F. INDIA, Aligarh, (ZDAMU) (examined) **syn. nov.**

The known synonyms of this species are *Halticella simplex* Wlk. (1862), *Halticella divisiicornis* Wlk. (1871), *Antrocephalus mahensis* Masi (1917), *Antrocephalus aethiopicus* Masi (1926), *Stomatocera bergeraci* Girault (1921).

Earlier I thought that *pandens* and *humilis* are different from *mitys* in having less angulate tooth but the discovery of several intermediate forms with intermediate types of hind femur dentation proved that all these three species are the same. *Stomatocera sulcata* is such an intermediate form. The species *vitatus* agrees with *mitys* and I cannot separate the two on any specific characters.

In this species the scutellum is provided with a median fovea; pre and postorbital carinae present; frontogenal sulci distinct and usually carinate; genotemporal margin with a deep furrow; scrobe and scape reach front ocellus; pronotum with anterior carinae

distinct but not forming tubercles in middle; gaster longer than thorax; basal carinae subequal to width between them; first tergite smooth and shiny; hind coxa with a tooth or carina on basolateral side; the adult female black with hind femora reddish or brownish; antennae completely or partly reddish or brownish; the reddish colour tends to become blackish and *vice versa* in some specimens.

Host : *Corcyra cephalonica* (Stainton) (Pyralidae); *Lamida moncusalis* Wlk. (Pyralidae).

Distribution: Africa, Asia and Australia.

Materials examined: 15 F. and 8 M. India Kerala, Narendran and party, 1985-'87; 1 F. & 1 M. Uttarpradesh: Gorahpur, Mishra; 1 F & 2 M. Bangalore, G. L. Pattal, 14.vi. 1975; 2.vi. 1981, 25.iv. 1981; 10 F. and 8 M., Tamil Nadu: Coimbatore, P.S. Nathan, 1951-'52; 1 F. 2 Bangalore, Narendran, 20.viii.1986; 1 M. Philippines: Island of Samar, Baker 1927; 1 F. China: Suifu, D.C. Graham, 11.1.1922; 1 F Luzon, Baker 1927; 1 F. Cochin China, M. Poilane, v. 1933.

3. *Antrocephalus bicolor* (Masi)

(Figs. 13,14)

Sabatiella bicolor Masi, 1932: 236, F. Taiwan, Kankau, (DEI), (examined).

Black: scape, pedicel, ring segment, legs yellowish brown: thorax brownish red; gaster black, with reddish tinge on basodorsal sides and lateral parts: antenna liver brownish, (in Sri Lankan specimens scape yellow). Head width subequal to maximum width of thorax; scrobe and scape not reaching front ocellus; pre and post- orbital carinae well represented: a deep furrow present between posterior eye margin and postorbital carina. Thorax with distinct anterior pronotal carinae and well developed median teeth or tubercles; apex of scutellum weakly emarginate; mesoscutum and scutellum with a

median carina (less pronounced on scutellum in the type): hind femora with comb of teeth restricted to distal one-fourth area. Gaster distinctly longer than thorax with three distinct carinae at base: median carina shorter than submedian.

Host: Unknown

Distribution: Taiwan, Sri Lanka (New Record), Singapore (New Record).

Materials examined: Apart from holotype: 1 M. Ceylon: Katugastata; P.Karunaratne, 22-24.xi. 1967: 1 M., Singapore, C.F. Baker, 1927.

4. *Antrocephalus abui* sp.nov.

(Figs. 15,16,392-394)

Female: Length 4.35 to 4.7mm. Black; scape liver brown with apex, pedicel and ring segments yellowish brown; fore and mid legs liver brown with apices of femora and tibia and tarsus brown; hind leg black with apex of femur, tibia and tarsus slightly brownish; tegula brown; pubescence dirty white.

Head (Fig.15) width subequal to maximum width of thorax; vertex protrudent, emarginate and depressed at middle; frons high at dorsal part; relative measurements of POL: 12, OOL:2; front ocellus with transverse carina below separating scrobe; preorbital carina well developed; postorbital carina hardly indicated; frontogenal sulcus weakly carinate; genotemporal region with a deep furrow along posterior margin. Antenna as in figure 16. Thorax closely pitted on dorsal side, interstices narrow, weakly carinate and rugulose; mesoscutum slightly convex in middle; apex (Fig.393) of scutellum deeply emarginate with two sharp teeth; median carina present on mesoscutum and scutellum; propodeum relatively short with submedian carinae distinct. Forewing with relative measurements of veins: postmarginal: 15, marginal: 14,

submarginal: 16 and stigmal:5. Hind coxa without a tooth on dorsal side; hind femur (Fig.392) without an inner basal tooth; twice as long as its maximum width. Gaster (Fig.394) longer than thorax, (38:35.5) when measured from dorsal side, first tergite with 3 carinae at base; the median carina slightly longer than sublateral carinae as long as the median width between the sublateral carinae; first tergite longest, exceeding more than half of gaster with dense microsculptures at distal side and lateral regions; tergites two to five sparsely microsculptured on dorsal side and densely pitted on sides; sixth tergite with two or three rows of pits with dense blackish pubescence including on epipygium and ovipositor sheath.

Male: Length 4.18 mm, resembles the female in all features.

Holotype: F.INDIA, Kerala, Calicut University Campus, Narendran and party, 26.vi. 1986, (DZCU). *Paratypes:* F. (INDIA) Andaman Islands, Port Blair, Narendran & Party, May 1987, (DZCU) *Paratypes:* M. PHILIPPINES, Mindanao, Dapitan, Baker, 1927 (USNM).

Remarks: This species resembles *A. cariniaspis* (Cameron) in general appearance but distinctly differs from it in having three carinae on the first gasteral tergite.

5. *Antrocephalus thresiae* sp.nov.

(Figs. 17,18)

Female. Length 4.43 mm. Black; scape, pedicel, ring segments, base of first funicular segments, bases and apices of fore and mid-femora, bases and apices of fore and mid tibiae, trochanters, fore and mid tarsi yellowish brown; median portions of fore and mid femora, median portion of fore and mid tibiae, hind coxa and parts of gaster liver colour; hind femora and tibiae liver brown with bases and apices pale brown; hind tarsi brown; eyes pale yellow; wings hyaline with brown infuscations near marginal vein;

rest of area with brownish tinge and pubescent. Head a little wider than maximum width of thorax; head about 1.2x as long as its width; relative measurement of POL: 25, OOL: 8. Frontogenal sulcus ecarinate; pre and postorbital carinae distinct; antennae with scape not reaching front ocellus; ring segment one-fourth as long as the fourth antennal segment, fifth less than fourth, scape subequal to combined length of segments four to six; club a little longer than twice its preceeding segment. Thorax with distinct anterior pronotal carinae forming two sharp well pronounced teeth in middle; pits on thoracic notum close, interstices narrow and rugulose on pronotum, anterior part of mesoscutum and on sides of scapulae; interstices on posterior median parts of mesoscutum, parts of scapulae, axillae and on scutellum smooth and shiny, half as broad as the diameter of pits; apex of scutellum bilobed; propodeum (Fig.17) flat; forewing with relative measurements of veins: submarginal: 123, marginal: 19, postmarginal: 22, stigmal: 6. A distinct break present between submarginal and marginal. Hind femora with unusually small comb like teeth at distal one-fourth of outer ventral margin, without an inner basal tooth; hind femur 2.3 x as long as wide; hind tibia becoming slightly swollen towards distal end, with distinct characteristic pits and pubescence; hind coxa without a dorsobasal tooth or carina. Gaster (Fig.18) distinctly shorter than thorax (30 : 57); first tergite with three carinae at base, smooth and shiny, posterior margin convex; tergites 2, 3, 4 & 5 smooth and shiny on dorsal side; sixth tergite smooth and shiny on median region, epipygium very short, less than half length of sixth tergite.

Holotype: F. MALAYSIA, South East Sabah: C.V. Achterberg. 20-26. iii. 1987, (RNHL).

Remarks: This is a unique species with peculiar hind leg and propodeum. There is a distinct break between marginal and submarginal. The end of submarginal vein at the break distinctly capitate.

6. *Antrocephalus brevidentata* Roy & Farooqi

(Fig. 19)

Antrocephalus brevidentata Roy & Farooqi, 1984: 7, F INDIA, Delhi (IARI) (examined).

Diagnostic features: Legs, tegulae, mandibles, scape, pedicel, ring segment, first few funicular segments yellowish red; forewing with brown infuscations adjoining marginal vein; preorbital carinae not joining auricular carinae; postorbital carinae faintly indicated; genotemporal furrow absent; pronotal carinae weakly developed without forming distinct median tubercles; scutellum with median fovea; interstices on scutellum wider than diameter of pits; hind coxa without dorsobasal tooth; hind femora without an inner basal tooth, its outer ventral margin with proximal tooth large (Fig. 19); posterior margin of first gastral tergite with a pit between the short carinae, posterior margin somewhat straight.

Host: Unknown.

Distribution: India, Delhi, Coimbatore (New Record).

Materials examined: Apart from holotype and paratype:

1 M. Coimbatore, P. S. Nathan, August, 1982.

7. *Antrocephalus peechiensis* sp. nov.

(Figs. 20, 395)

Female: 3.5 mm, black; ring segments, pedicel, basal and apical part of scape, bases and apices of femora and tibiae, all tarsi dirty brown yellow; ocelli and eyes greyish yellow (variation: the black colour turns to liver brown or yellowish brown on legs), tegulae blackish brown; forewings with 2 blackish bands and median hyaline area. Head 1.12 x as broad as its median length; vertex broad; relative measurements of POL: 23, OOL: 6; preorbital carinae distinct, reaching frontogenal sulcus; postorbital carinae

present running upwards behind the posterior margin of eyes; frontogenal sulcus weakly carinate; genotemporal furrow shallow; scrobe relatively narrow, striate not quite reaching front ocellus. Thorax with distinct close pits, interstices narrow and carinate; pronotal carinae well developed with median tubercles; apex of scutellum bilobed; propodeum with distinct submedian carinae; accessorial and sublateral carinae indistinct, narrow towards gaster with dense pubescence on sides; hind coxa without a dorsal tooth or carina; hind femur (Fig. 20) with extremely minute teeth on distal end of femur, no inner basal tooth; forewing with relative measurements of marginal vein 28; postmarginal vein 27; stigmal 6. Gaster (Fig. 395) longer than thorax, characteristically narrow towards base, basal carina as in figure 395; first tergite smooth and shiny.

Male: Unknown.

Holotype: F. INDIA. Kerala, peechi, Narendran & party, 28.x. 1985 (DZCU) *Paratypes:* 1 F. same data as for the holotype. 2 F. BRITISH BORNEO (SABAH): Ramu, T.C. Maa, 8-11.x. 1958 & 28-30.ix. 1958, (BBM). 1 F. SARAWAK, T.C. Maa, 18-30.vi.1958, (BBM). 1F. MALAYSIA, Negris, P. & M. Baker, 20.xii. 1979 (AEI).

Remarks: This new species closely resembles *cariniceps* but differs from it in having gaster narrow towards basal region, forewing with black bands; apex of scutellum deeply emarginate and hind femur relatively longer with denser pubescence.

8. *Antrocephalus nitidus* sp. nov.

(Fig. 21)

Female: Length 5.9-6.2mm. Black; scape, pedicel, ring segment & funicular segment, fore and mid legs (except coxae) hind tibia, hind tarsus, tegulae, ferruginous; hind coxa and hind femur

liver brown; gaster partly liver brown; eyes yellowish. Pubescence on thorax and wings golden yellow. Head 1.2 x as wide as long, subequal to maximum width of thorax; scrobe smooth and shiny reaching front ocellus; preorbital carinae distinct, joins frontogenal sulcus; postorbital carina distinct; genotemporal furrow indistinct; right mandible tridentate, left mandible bidentate. Thorax provided with large, smooth and shiny interstices (Fig. 21), very minute pits, sparse golden pubescence; pronotal carinae distinct on sides becoming faint near middle, not forming tubercles; propodeum with submedian carinae well represented and straight, accessorial carinae semicircular on proximal side, sublateral carinae and lateral costae not very distinct; lateral teeth indistinct. Forewing with relative measurements of veins: postmarginal : 42, marginal : 34, submarginal : 143 & stigmal : 7. Hind coxa with a small dorsobasal tooth; hind femur 1.94 x as long as its width, without an inner basal tooth, outer ventral margin distinctly bilobed, beset with a comb of teeth. Gaster subequal to thorax in length; first tergite smooth and shiny on dorsal side with 2 stout carinae at base, length of each carina 3 x the median length between them; tergites 2, 3, 4 and 5 smooth and shiny on dorsal side, faintly rugose on dorsolateral part; sixth tergite with sparse minute pits, interstices smooth and shiny, sides of gaster sparsely pubescent.

Male: Length 5.61 mm, similar to female except in having antenna and legs liver brownish or blackish; antenna stouter; pronotal carinae more prominent, distinctly bituberculate (with smooth and shiny tubercles); apex of scutellum less emarginate than in female.

Holotype: F. PHILIPPINES, Banahao, C.F. Baker, 1927, (USNM). *Paratypes:* 1 F. & 3 M. from PHILIPPINES (Samar Islands, Negros, Mindanao) C.F. Baker, 1927. (USNM).

Remarks: This comes near *A. atulyus* sp. nov. in general appearance, but differs from it in having (1), very large smooth and shiny interstices on thorax and head (2), body more slender (3), shape and size of hind femur very different, (4), wings with

golden pubescence, (5) postorbital carinae present; (6), frontogenal sulcus completely distinct, (7), gaster with longer basal carinae, (8), propodeum without lateral teeth.

9. *Antrocephalus decipiens* (Masi)

Haltichella decipiens Masi, 1929 : 176 . Lectotype F.(USNM no. 41887), PHILIPPINES, Kolambagan & Davao (Mindanao) (USNM) (examined).

This is an extremely variable species and in the beginning I thought 3 different species are involved. However examination of innumerable specimens from all over Oriental Region revealed that only one species is involved since several transitional forms are met with. The colour of legs ranges from black to red. Hind femora and hind tibia of lectotype has black colour with extreme base and extreme apex slightly brownish. The black colour of hind femur is often restricted to a smaller patch in the middle of the disc in the case of specimens from western part of Oriental Region. In some cases hind femur is completely reddish in western specimens and completely blackish (rarely) in the extreme eastern forms. Hind tibia also becomes red or brown in westerly specimens. In the lectotype the forewing is with black (or brownish black) patches and a clear white spot adjoining stigmal and postmarginal veins. Occasionally the black patches and the white spots are faintly indicated; Antenna completely black or black with basal funicular segments and scape (partly or completely) often reddish or brownish.

Diagnostic features: *Female*: Length 2.2-5 mm. Head width subequal to width of thorax, a trifle over 1.7 x as wide as long. Frons and vertex with distinct pits, POL 6 x OOL; pre and post-orbital carina distinct; genotemporal furrow absent. Thorax with interstices of pits narrow and rugulose; pronotal carinae absent; apex of scutellum bilobed; propodeum with distinct submedian carinae. Forewing with postmarginal subequal to marginal. Hind femur 2.17 x as long as broad. Gaster longer than thorax; first tergite

with 2 parallel ridges or carinae at base, length of each carina subequal to width between them; first tergite smooth and shiny on dorsal side; sixth tergite rugose.

Male: Length 1.98-4.1 mm. Resembles female but differs in having longer segments of antenna, more convex frons, wings without black patch (white spot almost indistinct).

Host: Unknown

Distribution: All over Oriental Region.

Materials examined: Apart from lectotype, about 100 specimens from the Indian subcontinent, several other specimens from Philippines, Singapore, Malaysia and other regions were examined.

10. *Antrocephalus ryukyuensis* Habu

Antrocephalus ryukyuensis. Habu, 1966b: 236, F. JAPAN: Ryukyus (BBM).

This is an EastAsian species. I have examined a M. & F. specimen from Philippines which fitted quite well to the good description of Habu. The species is closely related to *japonicus* but it can be distinguished in having interspaces of pits on thorax ecarinate on mesoscutum and the basal carinae of first tergite shorter. The scape, the pedicel and the ring segments are not yellowish brown but black.

Host: Unknown.

Distribution: Japan & Philippines (New Record).

Materials examined: 1 F., PHILIPPINES, Zamboanga, Mindanao, C.F. Baker, 1927, 1 M. PHILIPPINES, Manila, Robert Brown, Date unknown.

11. *Antrocephalus cariniaspis* (Cameron)

(Fig. 22)

Stomatoceras cariniaspis Cameron, 1911 : 8, Lectotype M. (BMNH no. 5-255 b) (here designated). BORNEO, (BMNH) (examined.)

Cameron based his descriptions on 2 males belonging to 2 different species, one is *cariniceps* Cameron (type BMNH-5-255 a) and the other I have selected as the lectotype since it fitted to the description more correctly than the other. Both *cariniceps* and *cariniaspis* resemble each other very closely but *cariniaspis* differs from *cariniceps* in having relatively very long first gastral tergite (Fig.22), in having a median carina on scutellum extending to mesoscutum (in some specimens extension on mesoscutum is vague and indistinct), in having longer carinae on first tergite and in having postmarginal vein approximately 1.5 x as long as marginal vein. In my earlier paper (Narendran 1985) I mistook this specimen (Lectotype) as female because of its long and pointed gaster with dense pubescence at apex.

Diagnostic features: *Female*: Length 2.7-4.7 mm. Black; legs reddish or blackish, scape and pedicel red or ferruginous (the black colouration of legs often tends to become reddish or brownish and *vice-versa* in different specimens). Wings without infumation; pubescence at apex of gaster blackish brown, head a trifle wider than thorax; vertex and preorbital carinae raised; scrobe not quite reaching front ocellus; frontogenal sulcus weakly carinate; genotemporal furrow deep, scape not reaching front ocellus, longer than segments four to seven combined, club longer than combined length of 2 preceeding segments; POL a trifle less than 3 x OOL. Thorax with distinct pronotal carinae and tubercles; pits close, and interstices narrow, weakly carinate; a distinct median carina runs from apex of scutellum to anterior margin of mesoscutum (This carina often weak or slightly indistinct in many specimens); apex of scutellum weakly emarginate. Forewing with black or brown patches; relative measurements of veins : postmarginal : 27, marginal : 20, submarginal : 130 and stigmal : 7. Hind coxa with carinate projection

near basodorsal side; hind femur 2.3 x as long as broad, without an inner basal tooth, outer ventral margin with a comb of teeth restricted to distal one-third from apex. Gaster (Fig 22) longer than thorax, with 2 stout carinae at base of first tergite; first tergite occupying a little more than half of thorax; sixth tergite shallowly pitted; epipygium thickly pubescent.

Male: Length 2.9–4.5 mm. similar to female; head with vertex and preorbital carinae more protrudent; anterior pronotal carinae and tubercles more pronounced;

Host : Pupa of *Eusophera* species from galls of *Calicopterys floribunda*, pupa of *Melitene aphidivora* (Melittidae) predaceous on *Oregma raphidis*.

Distribution : India (Kerala, Tamil Nadu & Himachal Pradesh), Hongkong, Philippines, Borneo (Kalimantan).

Materials examined : Apart from the primary types: 10 F. & 3 M. INDIA, Kerala, Calicut University campus, Narendran & Party, 1986. 1 F., NILAMBUR, Narendran & Party, 20. v. 1986. 1 M., HIMACHAL PRADESH, Palampur, ex-unidentified pupa on pine, coll. Unknown, v. 1968. 2 F., LEPAN ISLAND, Penutcock, Coll. Tjoa Tjien. 9. ix. 1938. 1 F., PHILIPPINES, Manila, Coll. Geocam pare, date unknown,. 1 F., HONGKONG. Koebelei (date unknown). 2 F., PHILIPPINES, Mindanao, Kolambagan, Baker, 1927., 1 F., BORNEO, Sandakan, Baker 1927, 1 F., INDIA, Tamil Nadu, Cinchona, P.S Nathan, May 1960, 1 M. Pallavan, M.D Delfinado, 18. Iv. 1968; 1 M., INDIA, Tamil Nadu, Anna Malai Hills, P.S. Nathan, May. 1969.

12. *Antrocephalus japonicus* (Masi)

(Fig. 23)

Sabatiella japonica Masi. 1936 : 48, F ?, JAPAN, (DEI ?).

Antrocephalus brevicorpus Husain & Agarwal, 1982 a : 329, F., INDIA,

Uttar Pradesh, Aligarh, (ZDAMU) (examined) *syn. nov.*

Habu redescribed the species in detail and it is quite easy to recognise this species from this redescription. A homotype of this species was also examined and I cannot separate it from *brevicorpus*. In this species the preorbital carinae is prominently raised in males. This species resembles *Antrocephalus cariniceps* (Cameron) very closely but differs from it in having the scutellum (Fig. 23) more convex and propodeum more perpendicular.

Host : Unknown.

Distribution: India, Malaysia (New Record) Taiwan (New Record) and Japan.

Materials examined : Apart from the type of *brevicorpus*: 11 M, 4 F., MALAYSIA, Negris, S. Coll. P. & M. Baker, 1978-1979. 2 F., TAIWAN, Woufeng, coll. H.N.M. Townes. 28. iii. 1983. 1 F., TAIWAN, Wushe, coll. Henry Townes, 13. iv. 1983. 2 F., & 2 M., INDIA, Kerala, Narendran & Party, 1984-1988.

13. *Antrocephalus cariniceps* (Cameron)

(Fig. 24)

Coelochalcis cariniceps Cameron, 1911 : 4, M., BORNEO, (BMNH no 5-256) (examined)

Stomatoceras transversus Cameron, 1911 : 11, F., BORNEO, (BMNH no. 5-262) (examined) *syn. nov.*

The other known synonyms (Narendran (1985a) are: *Coelochalcis denticollis* Cameron (1911), *Sabatiella neduganiensis* Mani & Dubey (1974) The lectotype female of *transversus* looks almost exactly similar to that of *cariniceps*. This species is characterised by raised preorbital carinae and raised pronotal carinae with prominent tubercles. First gastral tergite has a pair of long carinae at base, in some of the eastern specimens the interstices between punctures are

wide apart on mesoscutum and pronotal tubercles are much more prominent than those of the western specimens.

Host: *Opisina arenosella* Walker (Oecophoridae)

Distribution: India, Malaya and Singapore

Materials examined: Apart from holotype : 20 M., and 4 F., INDIA, Kerala, Narendran & Party, 1985-'87, 1 F., MALAYSIA, P. & M. Baker, 27. x 1, 1978. 1 M, SINGAPORE, C.F. Baker. 1927.

14. *Antrocephalus townesi* sp. nov.

(Fig. 25)

Female : Length: 5-5.3 mm. Black; eyes pale yellowish grey; bases and apices of fore and mid femora brown; apices of fore and mid tibiae brown; fore and mid tarsus brown; hind coxae and femora rufous; hind tibiae and tarsus pitch black; forewing with two brownish infuscations; one adjoining marginal vein and other beyond stigmal. Pubescence dirty brownish white. Head as in figure 25; frontogenal sulcus ecarinate on dorsal half, weakly carinate ventrally; genotemporal furrow deep; postorbital carinae absent. Antenna with scape almost reaching front ocellus subequal to combined length of segments 2 to 6; club longer than the length of preceeding two segments combined; relative measurements of POL : 19, OOL: 4.5. Thorax with pronotal carinae not forming tubercles in the middle; interstices of pits narrow but smooth, apex of scutellum distinctly bilobed; propodeum with distinct submedian and sublateral carinae, accessorial carinae indistinct; postspiracular tooth weakly indicated; hind coxa with a distinct carina at basodorsal region; hind femur 2.16 x as long as wide; hind tarsal segments unusually thick with dense pubescence, forewing with relative measurements of veins : submarginal : 156, marginal : 27, postmarginal : 42, stigmal : 9. Gaster distinctly shorter than thorax (49 : 60); first tergite smooth with sparse scattered pits on sides; base of first tergite with a deep pit, bounded laterally by a pair of carinae; each carina as long as width of pit; second to fifth tergite smooth medially, microsculptured and

pubescent on sides; sixth tergite with distinct shallow pits, interstices rugulose; epipygium carinate at middle with large distinct pits on sides.

Male : Unknown.

Holotype : 4 F. MALAYSIA : Negris, Coll. P. & M. Baker, 5. v. 1979 (AEI). *Paratypes* : 4 F., with same data of holotype except dates of collection : 26.ix.1979, 14.xii. 1979, 17.xi.1978. 1 F., MALAYSIA, S.W. Sabah, coll. C.V. Achterberg, 14.i.1987.

Remarks: This species comes close to *A. nasuta* (Holm.) and *A. atulyus*. However it differs from them in having : Gaster distinctly shorter than thorax and differently shaped; hind tarsal segments larger; genal region relatively longer, forewing with 2 brown patches: hind tibia and tarsus deep black.

15. *Antrocephalus achterbergi* sp. nov.

(Fig. 26)

Female: Length: 3.4 mm. Black; eyes pale yellow; ocelli brownish yellow. The following parts reddish brown: fore and mid tarsi, all trochanters, bases and apices of fore femora and tibiae, ventral side of hind coxa, base of hind femora, apices of hind tibiae and ventral side of hind tarsi. Forewing with brownish tinge, veins brown, a brown patch near marginal; pubescence on body dirty white. Head a little wider than its length; preorbital carinae distinct; scrobe reaches front ocellus, frontogenal sulcus distinct, ecarinate; postorbital carinae absent: genotemporal furrow deep. Antenna with scape reaches front ocellus, shorter than combined length of segments 4-6; club 2.5 x length of preceding segments, pedicel one-third length of scape; ring segment half the length of pedicel. Thorax closely pitted; pronotum with anterior carinae distinct, not forming median tubercles; pits on anterior part of mesoscutum relatively smaller than remaining parts; interstices smooth and shiny, more than diameter of pits in most places; apex of scutellum weakly but broadly emarginate. propodeum

with submedian and sublateral carinae distinct; postpiracular tooth weakly developed. Forewing with relative measurements of veins: submarginal : 166, marginal : 43, postmarginal : 56, stigmal : 8. Hind coxa with a dorsobasal tooth; hind femur 2.11 x as long as broad, with out an inner basal tooth, outer ventral margin bilobed. Gaster (Fig. 26) length subequal to that of thorax; basal carinae short, as long as the width between them; first to fifth tergites smooth on dorsal side, sparsely pitted and pubescent on sides; sixth tergite vaguely and faintly, pitted, epipygium carinate at middle.

Male: Unknown.

Holotype: F. THAILAND, Suratthani (=Bandon) Coll. P.H. Pronk 18.x.1976.

16. *Antrocephalus bouceki* sp. nov.

(Fig. 27)

Female: Length: 4.8mm. Black; tegulae and legs (except coxae brownish red). wings hyaline with brownish tinge, brown infuscation present near marginal vein. Head wider than thorax, 1.3 x as wide as its length; preorbital carinae distinct, reaching frontogenal sulcus; scrobe reaching front ocellus, not striated; postorbital carinae absent; genotemporal furrow present; relative measurements of POL: 29, OOL : 5.1. Antenna as in figure 27. Thorax with anterior pronotal carinae restricted to extreme lateral ends; pits on thorax widely separated, interstices wider than the diameter of the pits; apex of scutellum deeply emarginate and bilobed; propodeum with a well developed tooth behind spiracle. Forewing with relative measurement of veins : submarginal 72, marginal: 32, post marginal: 40, stigmal: 7. Hind coxa with a dorsal carina at base; hind femur 2.46 x as long as its width, without an inner basal tooth, outer ventral margin with a long row of pits as in *nasuta* and *nitida*. Gaster distinctly longer than thorax; posterior margin of first tergite straight, basal carinae as long as width between them; first tergite to fifth tergite smooth and shiny dorsally; sixth tergite faintly rugosopunctate.

Male: Unknown.

Holotype: F. WEST ERIAN, Bernhard, Camp. Coll: J. Oethof, 14.x.1938. (BBM)

Remarks: This is an extralimital species. I include this in this monograph because it may be encountered in the Oriental Region. It comes near *A. nasuta* in general appearance but differs from it in having characteristic pits on thoracic notum, interstices extremely smooth and shiny, much wider than the diameter of the pits; scrobe not striated.

17. *Antrocephalus atulyus* sp. nov.

(Figs. 28,29)

Female: Length: 4.78-6.1 mm. Black; pedicel, ring segment, first and second funicular segments, fore and mid legs (except coxae), hind trochanter, bases of hind femora, apices of hind femora slightly, hind tibia, hind tarsi and tegulae pinkish red. Pubescence golden; forewings with brownish pubescence and brownish infuscation adjoining marginal vein. Head 1.15 x as wide as its length; preorbital carinae distinct; postorbital carinae absent; genotemporal furrow deep; frontogenal sulcus distinct but not carinate; relative measurements of POL : 29, OOL : 5; scrobe shiny with striations, reaching front ocellus; interantennal projection moderately narrow. Thorax with fine round pits and characteristic golden pubescence, interstices mostly broader than diameter of pits, smooth and shiny (in some paratypes interstices somewhat rugose and slightly carinate-variation); apex of scutellum as in figure 28. propodeum with distinct submedian and sublateral carinae postspiracular tooth present. Fore wing with relative measurements of veins postmarginal: 29, marginal: 22, submarginal: 76, stigmal: 5. Hind coxa with distinct dorsobasal tooth; hind femur as in figure 29, without an inner basal tooth. Gaster longer than thorax (93:90): first tergite smooth and shiny on dorsal side with a pair of short carinae at base, each carina as long as width between them. second and third tergites emarginate posteriorly, smooth

and shiny dorsally; fourth & fifth tergites rugulose and shiny dorsally; sixth tergite rugosopunctate on basodorsal part; gaster with punctures and golden pubescence on sides especially towards posterior side.

Male: Length: 5.1 - 5.9mm. Similar to female except in having stouter, longer and more blackish antennae; stouter pronotal carinae; shorter gaster; smaller brownish patch near marginal vein.

Variations: Antennae with more pinkish segments in some eastern specimens. The pink colour of hind tibiae, fore and mid legs occasionally becomes black in some specimens from Indonesia.

Host: Unknown.

Holotype: F. PHILIPPINES, Mindanao, Dipitan, C.F. Baker, 1927 (USNM). *Paratypes*: 8F. 12 M. SINGAPORE, Baker, 1927 (USNM). 1 F. 11 M. PHILIPPINES, Baker, 1927 (USNM). 1 F., INDONESIA, Halmahera, A.C. Messer, 1-14, June, 1981 (USNM). 1 F., THAILAND, D.E. Hardy, 5. iii. 1968 (BBM). 1 F., E. NEW GUINEA, Wan Mc Adame Park, Mrs, A. Richards, 17.ix.1972 (RNHL), 1 F., JAVA, Jacobson, 1911 (RNHL). 1 M., TAPOA, J.v.de. Vecht, 1938, (RNHL). 1 M., W. JAVA, J.v.de. Vecht, 15-19. viii. 1953 (RNHL). 1 M., W. ERIAN, Stan-Rame, Sibil. 18.vi. 1959 (RNHL)

Remarks: This species comes near *A.nasuta* in having long hind femora, deeply incised apex of scutellum and forewing with brown patch near marginal vein. However this species can be distinguished from *nasuta* in having 1) golden yellow pubescence and characteristic pits on thorax, 2) characteristic long row of comb-like teeth with a relatively deep depression near proximal lobe. This species also comes near *Antrocephalus murakamii* Habu a native of Japan but differs from it in having 1) forewing without a transparent white spot near stigmal vein 2) postmarginal distinctly more than 4 x stigmal 3) eyes not ciliate, and 4) propodeum without median carina.

18. *Antrocephalus nasuta* (Holmgren)

(Fig. 30)

Haltichella nasuta Holmgren, 1869 : 437, Lectotype F., PHILIPPINES, Manila (NRS) (examined)

Antrocephalus rufipes Cameron, 1905 a: 95, Lectotype: F. (here designated) SARAWAK, Trusan (BMNH no. 5-274) (examined) **syn. nov.**

Antrocephalus momius Masi 1926 : 43: Lectotype F. (here selected) FORMOSA, Kankau (DEI) (examined) **syn. nov.**

Antrocephalus longidentata Roy & Farooqi, 1984: 10, F., INDIA, Orissa (IARI) (examined) **syn. nov.**

This is a common species which can be easily confused with *A. dividens* (Wik). However the long red hind femur (Fig.30), the brown infuscation adjoining marginal vein and deeply incised apex of scutellum are the important features with which it can be distinguished. *A. fascicornis* (Walker) also closely resembles this species but differs from it in having frons more convex and hind femora much thicker than that of *nasuta*. I examined the primary types of *rufipes*, *momius* and *longidentata* and did not find any specific difference between them.

Host: Unknown.

Distribution: All over Oriental Region, West Irian, and Papua New Guinea.

Materials examined: Apart from the primary types mentioned above, I examined the following also: 1 F., 1 M., INDIA, Kerala, Sultan's Battery, Narendran et. al 29.ix.1985. 1 F., Kerala, Peechi, Narendran & Party 28.x.1985. 10 F., 9 M., Kerala, Parambikulam, Narendran & Party, 14 22.xii.1985 1 M., Kerala, Feroke, Narendran & Party 27.xi.1985. 2 F., 2 M., West Bengal, Calcutta, Salt Lake Area, S.K.Gupta, v.1982 1 M.Tamil Nadu, Nilgiris, P.S Nathan,

1960. 2 F., SARAWAK, Hyaga Ngemala 10.i.1975. 1 F., Kerala, Walayar (S. Malabar), P.S. Nathan, ix.1956. 22 F., 46 M., PHILIPPINES, C.F. Baker 1927. 2 M. MALAYSIA, Kualalumpur, Typhus army unit, date unknown. 1 M. PAPUA NEW GUINEA, Morsbe Dist. Dietz, 8-14.x.1976. 1 M. PHILIPPINES, Mindanao, Kolambagan, Banks 1914. 2 F., 1 M., JAVA, Bogor, J.v.de. Vecht, 3.x.1953, 22.ix.1953, 9.v.1953. 1 F., BUITENZURG, J.v.de. Vecht, 17.ix.1963. 1 M., WEST IRIAN, Bernhard camp, J. Oethof, 6.ix.1938. 1 M., PHILIPPINES, Mt. Montalban, H.M. Torrevilles, 18.iii.1965. 1 F., INDIA, W.B. Calcutta, C.A. Viraktamth, 14.iv. 1975. 1 F., 1 M., SINGAPORE, C.F. Baker, 1927. 2 F. MALAYSIA, Negris.S, P. & M. Baker, 8.xi. 1979, 14.i. 1979, 14.i.1979, 4 F., 11 M., Calicut University Campus, Narendran & Party 1985-1986.

19. *Antrocephalus phaeospilus* Waterston

(Fig. 31)

Antrocephalus phaeospilus Waterston 1922: 22, F. INDIA, Bhim Tal, Kumaon (BMNH) (examined)

Antrocephalus sinicorum Masi 1926: 46, Lectotype F. (heredesignated) (DEI) (examined) **syn. nov.**

I examined the syntypes of *sinicorum* through a loan from DEI and found that it is the same as *phaeospilus* Waterston. Masi redescribed this species as a new species, probably unaware of Waterston's *phaeospilus*. This species closely resembles *A. dividens* but differs from it in having quite thicker hind femur (Fig. 31) than *dividens*; longer row of comb of teeth on ventral margin of hind femur; brownish infuscation adjoining marginal vein and in the other features already mentioned by Waterston (1922).

Host: Unknown. *Opisina arenosella* Walker

Distribution: India & Taiwan.

Material examined: Apart from the primary types, the following also examined: 1 F., INDIA, Kerala, Calicut University Campus,

Narendran & Party, 13.x.1986. *Paratypes*: 16 F., 1M., of the same locality collected in 1981-1986.

20. *Antrocephalus validicornis* (Holmgren)

(Fig. 32)

Halticella validicornis Holmgren, 1869: 438, Lectotype M. Java (NRS) (examined)

This species resembles *A. utulyus* very closely but differs from it in having 1) different shape of hind femur (Fig. 32) with shorter length of comb of teeth on ventral margin, 2) interstices of pronotum and of anterior part of mesoscutum rugose and somewhat carinate, 3) apex of scutellum weakly emarginate, 4) forewing without any brown or black infuscation adjoining marginal vein or anywhere else.

The lectotype (M) (selected by Z. Boucek) lacks gaster, one of the legs dismantled. This specimen is on pin and not in good condition.

Host : Unknown.

Distribution : Java & Malaysia.

Materials examined : Apart from the lectotype the following: 1 F., W. JAYA, Bogor, J.v.de. Vecht, 3.x.1953. 1 F., MALAYSIA, Negrin. S., P. & M. Baker 20. viii, 1978.

21. *Antrocephalus ceylonicus* sp. nov.

(Figs. 33, 396)

Female: Length: 4.31 mm. Black; antennae liver blackish; eyes pale yellow; tegulae & legs brown. Forewings faintly smoky with dark brown patches below marginal and subapical parts; epipygium and ovipositor sheath liver brownish black.

Head (Fig. 396), 1.1 x as wide as its length; POL 3 x OOL; eyes bare; vertex not emarginate from front view; scrobe striate, reaching front ocellus; preorbital carinae distinct and well developed; postorbital carinae short and irregular running upwards; frontogenal sulcus slightly indicated; genotemporal furrow deep. Antenna with length of scape distinctly longer than combined lengths of segments 4 to 6; pedicel length subequal to fourth segment; fourth, fifth and sixth subequal in length; ring segment a trifle less than half length of fourth segment; length of club 3 x length of preceeding segment. Thorax without anterior pronotal carinae or tubercles; pits on notum close and interstices less than half diameter of a pit; apex of scutellum deeply emarginate; propodeum with submedian, accessory and sublateral carinae distinct, without lateral teeth. Forewing with relative measurements of veins: postmarginal 15, marginal 19, submarginal 41, stigmal 4. Hind coxa with a weak tooth or carinae on dorsobasal side; hind femur 2.18 x as long as its maximum width, very weakly bilobed with a row of comb of teeth, without an inner basal tooth. Gaster (Fig. 33) long and acuminate; tergites 1 to 5 smooth and shiny with rugosities on dorsolateral regions; posterior margins of first and second tergites distinctly emarginate; sixth tergite rugose with sparse shallow pits; epipygium distinctly longer than median length of sixth tergite.

Male : Unknown.

Holotype : F. SRILANKA (=Ceylon) date of collection and collector unknown (UZM). *Paratype*: 2 F., of the same data (one in UZM) one in DZCU). 1 F., PHILIPPINES, C.F. Baker, 1927 (USNM); 1 F., JAVA, E. Jacobson, xi. 1914. (RNHL).

22. *Antrocephalus scutellatus* sp. nov.

(Fig. 34)

Female : Length: 3.12 mm. Black, eyes and ocelli pale yellow; antennae liver brown with scape, pedicel, first and second funicular segments brown, fore and mid legs pale yellow with pale liver brown medially on femora and tibia, hind femora liver brownish- black with

base and apex slightly paler; hind tibia pale brown at base and apex with median part liver brownish black. Forewing subhyaline with two faint brownish patches, one adjoining marginal vein and other beyond postmarginal.

Head 1.11 x as wide as its maximum width; preorbital carina well represented; frons and vertex distinctly pitted; scrobe striated, reaching front ocellus; postorbital carinae faintly indicated; genotemporal furrow shallow towards ventral part, rather deep towards upper side; relative measurements of POL: 21, OOL: 5. Antennae with scape distinctly longer than length of segments 4 to 7; club as long as 2 x length of combined preceding segment, ring segment a trifle less than length of pedicel. Thorax with anterior pronotal carinae weak and irregular without forming tubercles or teeth in middle; pits on pronotum and scutellum close and interstices narrow but smooth; interstices on median part of mesoscutum wider than diameter of pit, smooth; scutellum with a well developed median ridge; apex of scutellum widely emarginate; propodeum with distinct submedian and sublateral carinae, median carina present on proximal half of median areola delimited by a cross carina, lateral teeth indistinct. Forewing with relative measurements of veins: postmarginal: 24, marginal: 24, submarginal: 78, stigmal: 6. Hind coxa without a dorsobasal tooth or carina; hind femora about twice as long as wide, without an inner basal tooth, outer ventral margin without distinct lobes, with a row of extremely minute comb of teeth extending from middle to apex. Gaster as in figure 34, longer than thorax, basal carinae diverging without a pit or depression inbetween; first tergite smooth and shiny with dorsolateral parts shagreened; sixth tergite faintly pitted interstices rugose, epipygium carinate at middle.

Male: Unknown.

Holotype F. PHILIPPINES, Mindanao, Zamboanga, C.F. Baker 1927 (USNM)

Remarks: *A. peechiensis* comes near this species in general appearance but differs from *scutellatus* in having 1) distinct pronotal carinae and median tubercles 2) interstices narrow and carinate on thoracic notum 3) pubescence white and not brownish as in *scutellatus*.

23. *Antrocephalus distinctus* sp.nov.

(Fig. 35)

Female; Length: 3.78-4.69 mm. Black; basal funicular segments, scape, legs & tegulae red (red often tends to become blackish red in some variations), eyes & ocelli blackish yellow. Wings with a brownish tinge, a brown patch adjoining marginal, a whitish faint spot near apex of stigmal. Pubescence on dorsum of thorax yellowish brown (except posterior lateral sides of pronotum, lateral sides of axillae and lateral sides of propodeum where pubescence are dirty white). Head a little wider than its maximum length (120:115); postocciput with a distinct round small pit, interstices smooth, vertex slightly raised, and with thick, smooth and polished frontal carinae running behind front ocellus and continuing as preorbital carinae; postorbital carinae absent; scrobe reaches front ocellus; relative measurements of POL : 26, OOL : 4. Left mandible with 2 teeth. Antenna with length of scape subequal to combined length of segments 4 to 7; pedicel a little shorter than fourth segment, ring segment a little less than half of pedicel, length of club 2.54x the length of preceding segment. Thorax with anterior pronotal carinae distinct, not forming tubercles in middle, punctures minute, interstices broader than diameter of pits, smooth and shiny; posterior border with a row of sparsely spaced yellowish brown pubescence which becomes thicker and whiter at extreme sides; mesoscutum with very minute pits especially on anterior side, yellowish brown setae arising from each pit, interstices much broader than diameter of pits, smooth and shiny. Scutellum (Fig. 35) with punctures more widely spaced, apex as in fig. 35; propodeum with submedian and sublateral carinae distinct; accessory carinae indistinct, lateral teeth hardly indicated. Forewing with relative

measurements of veins: submarginal: 136, marginal: 43, postmarginal: 38, and stigmal: 15. Hind coxa with a tooth on dorsobasal side; hind femur 2.07x as long as its median width, without an inner basal tooth, outer ventral margin with a long row of comb of teeth, unilobed. Gaster length subequal to that of thorax (in some paratypes a trifle longer than thorax); first tergite with two short basal carinae; space between carinae subequal to length of the carina; first tergite smooth and polished, not emarginate posteriorly; second to fifth tergite smooth, slightly shagreened, microsculptured and pubescent on sides, posterior margin concave; sixth tergite with irregular shallow pits; epipygium and ovipositor sheath pubescent.

Male: Length 4.03 mm. Differs from female in having black, thicker antenna; punctures on dorsum of thorax closer and interstices narrower, partly smooth.

Holotype: F. PHILIPPINES, Negros Is, Cuernos, Mts, Baker, 1927, (USNM). Paratypes: 2F. of the same data as that of holotype. 11F. PHILIPPINES, Mindanao, 3F, Dapitan, 1F Basilan, 1M., Zamboanga, all collected by Baker, 1927 (USNM).

Remarks: This species comes near *rufipes* and *fascicornis*. However *rufipes* & *fascicornis* differ from this species in having 1) punctures on thorax relatively much longer and more closely situated, 2) in having interstices narrow and often carinate or rugose at least in pronotum and anterior part of mesoscutum, 3) and having apex of scutellum deeply incised. Apart from this, the hind femur of *fascicornis* is much more swollen than that of this species. *A. ishii* Habu comes close to this species but differs from it in having 1) punctures on thorax more closer 2) interstices faintly striate on pronotum 3) pubescence silvery 4) hind femora black 5) marginal vein as long as post marginal and 6) propodeum with prominent carinae and areola.

24. *Antrocephalus fascicornis* (Walker)

(Fig. 36)

Halticella fascicornis Walker; 1871: 43. F. INDIA, Bombay (BMNH type no. 5-544) (examined)

The lectotype F. is in bad condition. The apex of scutellum is damaged; It resembles *nasuta* Holmgren in general appearance but differs from it in having more swollen hind femora; gaster distinctly shorter than thorax; frons forming a distinct angle (Fig.36) in front of eyes in lateral view. Other diagnostic features are as follows: genotemporal furrow deep and shiny; first tergite of gaster with a pair of stout and short carinae; hind femur bilobed, forewing with a brownish patch adjoining marginal; apex of scutellum with 2 short teeth; hind femora without an inner basal tooth; hind coxa with a weak dorsobasal tooth or carina. Antenna with scape shorter than combined lengths of segments 4 to 7, pedicel a little over one-fifth length of scape, length of club a trifle less than the length of preceding segment.

Host: Unknown.

Distribution: Indian subcontinent, China, Java, Philippines, Malaya.

Materials examined: Apart from Lectotype: 1 F. INDIA: Kerala, C.U.Campus, Narendran and party, 25.v.1985; 1 M. 31. viii. 1985; 1 F., 4.ix.85, 1 F., 19. xi. 85, 1 M. & 1 F., 7-16. i. 1986, 2 F., 22-23. iii.1986; 1 F., 13. iv.1986; 1 M. & 2 F., 9-19. vii. 1986; 1 F. 23.viii.86; 2 F., 1-2.ix. 1986; 12 M. & 10 F., 6-30.x.1986; 2 F., 4-7.xi.86, 1 M., INDIA: Kerala, Calicut, Narendran & party, 8.vii.1985; 1 F. 1969; 1 M., INDIA: Kerala, peechi, Narendran & party, 20.x.1985; 3 F. & 1 M., INDIA: Kerala, Silent Valley, 15-16.v.1985; 3 M. INDIA: Delhi, Narendran & party, 6.viii.86; 1 F. INDIA: West Bengal, Calcutta, Narendran & party, 1986; 1 M. & 1 F., INDIA: West Bengal, Calcutta, SaltLake, S.k. Gupta, v.1982; 1 F., 27. xi. 1982; 1 F., 27.vi. 1932; 1 M. 17.x. 1982; 1 F., 6.xi. i. 82, 1 M., 12. iii. 1986; 1 F., INDIA: Gujarat, Asthan, 19.vii.62 1 F, INDIA, T.

Nadu, Coimbatore, P.S. Nathan, iv. 1951. 1 F., Gudalor, iv. 1949 2F, 3 M, Coimbatore, P.S. Nathan, ix, 1953. 1 F., Cinchona, Annamalai Hills, P.S. Nathan, vi. 1963; 1 M, ix. 1965. 1 M, Nilgiri Hills, P.S. Nathan x. 1960, 1 M, Annamalai Hills, x. 1961. 1 F., 1 M. Coimbatore, xi, 1962. 1 F., 1 M., vi. 1962. 1 M, Annamalai Hills, v. 1959. 1 F., MALAYA, Island of Penag, Baker, 1927. 1 F. PHILIPPINES, Luzon, Mt. Makiling, Baker, 1927. 1 F., JAVA, Verbeck, 1932. 1 F, Mt. Salak, J.v.de Vecht, 1939. 1 M, NEPAL, nr. Birgan, Cam. Nepal Expd. 1.x.1967. 1 M, Karnataka, Bangaloe, T.V.R. Reddy, 29.vii. 1980. 1 F., Karnataka, Annekel, C.A. Viraktamath, 22.v.1977.

25. *Antrocephalus dividens* (Walker)

Chalcis dividens Walker, 1860: 357, F., SRI LANKA, (BMNH) (examined).

Halticella sepyra Walker, (1846b) : 110, Lectotype M, INDIA,

Bombay, (HDEO) (examined) **syn. nov.**

Halticella apicalis Walker, 1874 : 200, F (BMNH) (examined). **syn. nov.**

Coelochalcis carinifrons Cameron, 1904 : 111, M, INDIA, Sikkim, (BMNH no. 5-250) (examined) **syn. nov.**

Antrocephalus varipilosus Cameron, 1907b : 580, M, INDIA, Gujarat, Deesa, (BMNH no. 5.252) (examined) **syn. nov.**

Antrocephalus longicornutus Strand, 1911 a : 8, Lectotype M, SRILANKA, (ZMHU) (examined) **syn. nov.**

Sabatiella nepalensis Mani & Dubey, 1974 : 21, F., NEPAL, Kathmandu, (USNM) (examined) **syn. nov.**

Antrocephalus delhiatus Roy & Farooqi, 1984 : 9, F., Delhi, (IARI) (examined) **syn. nov.**

This is a very common species widely distributed all over Oriental Region. The colour of hind tibia varies from reddish brown to black (except their apex). Earlier I thought that two distinct species are involved namely *dividens* and *apicalis* or *sepyra*, but after examining several hundreds of specimens from all over Oriental Region several intermediate and transitional forms were discovered. Redescriptions of the species are provided by Habu (1960) and Narendran, (1976).

The type of *sepyra* is in bad condition. Broken antennæ, one hind coxa, one hind femur, one hind tibia and one middle coxa are pasted on a card. The other syntype M. (No. HYM. 1212, 2/2) is a *Brachymeria* species. (This specimen has head without antennae except scape, thorax, wings of one side, fore and one mid leg present, gaster and hind leg missing). The type of *sepyra* is a male of *apicalis*. The lectotypes of *carinifrons*, *varipilosis*, *longicornutus* and the holotypes of *nepalensis* and *delhiatus* are found to be the same as *dividens* Walker.

Diagnostic features: Preorbital carinae present, post orbital carinae absent; genotemporal furrow present; anterior pronotal carinae present, weakly or distinctly tuberculate in middle; apex of scutellum weakly or strongly bilobed; hind coxae with a weak tooth or carina near base; hind femora usually twice as long as wide, without an inner basal tooth, outer ventral margin with blunt rounded lobe before apex, series of ventral dense teeth arising from a little before middle than beyond lobe and ending before apex. Gaster length subequal to thorax, first tergite smooth and shiny with short weak basal carina on each side of basal median fovea.

Host : Unknown.

Distribution : All over Oriental Region.

Material examined: Apart from the primary types mentioned above several hundreds of specimens from all over Oriental Regions were examined.

26. *Antrocephalus brevigaster* Masi

Antrocephalus brevigaster Masi, 1926: 231, Lectotype F., (here designated,) Taiwan, Taiharin (D E I) (examined).

Antrocephalus hyalopennis Husain & Agarwal, 1982a: 333. F., INDIA Aligarh, (ZDAMU) (examined) *syn. nov.*

I examined the type of *hyalopennis* and I cannot separate it from *brevigaster* on specific characters. The base and apex of hind femur slightly reddish in *hyalopennis* and some specimens which

is a variation. The diagnostic features of the species are: head with preorbital carinae distinct; genotemporal furrow distinct, anterior pronotal carinae distinct, tubercles weak or indistinct, interstices on thoracic notum narrow and rugose, apex of scutellum very weakly emarginate, almost rounded in some specimens. Forewing with postmarginal subequal to marginal, gaster subglobose with two short carinae at base; hind coxa with weak carinae on dorsobasal side; hind femur without an inner basal tooth.

Host: Unknown.

Distribution India, Taiwan, Philippines (New Record) Malaya (New Record).

Materials Examined: primary types of *brevigaster* and *hyalopennis*. 1 F., INDIA, Uttar Pradesh, Aligarh, Hayat, 30. xi. 1983. 1 M., Aligarh, Hayat & Islam, July 1983. 1 F. & 2 M., Andhra Pradesh, Guntoor, Narendran & Party, 30.viii. 1985. 1 F., KARNATAKA, Bangalore, Narendran & party, 27. iii. 1985. 1 F., West Bengal Calcutta Salt Lake Area S.K. Gupta, 15.v.1982. 1 F., Orissa, D.E. Hardy, 10.v.1944. 2 F., PHILIPPINES, Mindanao, Baker, 1927., 1 F., MALAYA, Penang, Baker 1927. 1 F., INDIA, Coimbatore, P.S. Nathan, November, 1955.

27. *Antrocephalus lugubris* (Masi)

(Fig. 37)

Tainania! *ugubris* Masi, 1932: 238, M., (DEI).

This species resembles *hakonensis* in having preorbital carinae joining with auricular carinae and in having scutellum with a median furrow. However it differs from *hakonensis* in having a peculiar apex of scutellum (Fig. 37) and in having hind femur without inner basal tooth. First gastral tergite without basal carinae but with a pit. Propodeum with post-spiracular teeth distinct.

Host: Unknown.

Distribution: India, Taiwan, Vietnam, Singapore, Java, Indonesia, Philippines,.

Materials examined: 1 F., India, Kerala, Calicut, Narendran et al., 7.viii.1985. 9 F., Calicut University Campus, Narendran et.al., 20.viii.1985; 12.ii.1986; 5.vii.1985; 10.ii.1987; 18.viii.1986. 6 M. of the same data, except dates of collection in 1986. 4 M., Kerala, Nilambur, Narendran et.al., 20.v.1985. 1 M., Kerala, Sulttan's Battery, Narendran et.al., 19.x.1986. 2 M., Kerala, Calicut, Narendran, et.al., 7.iii.1985. 1 F., INDIA, Uttar Pradesh, Aligarh, M. Hayat 26.iv.1985. 3 M., Walayar Forest (South Malabar), P.S. Nathan. iv.1960. 22 M., India, Tamil Nadu, Annamali Hills, P.S. Nathan. May 1955 & April 1966, May 1960. November 1959 & May 1966. 3 F. & 6 M., Coimbatore, P.S. Nathan, October 1985, March 1961, July 1952, August 1957, 2. viii. 1957. 1 M., Pondicherry, Kerkikal P.S. Nathan, April 1963, 1 M., INDIA, Orissa, P.S. Nathan, October 1958, 1 F., Vietnam, C.M. Yoshimoto, 7.xi.1986, 1 F., Singapore, C. F. Baker, 1927. 1 F., Java, M. Jacobson, 3.ii.1909. 1 M., INDONESIA Celebes, J.v.d. Vecht, 12.xii.1936. F., Taiwan, Wufeng. H. Townes, 10.iv.1952, 1 M., PHILIPPINES, Palawan, H. Townes, 6.xii.1952. 2 M., INDIA, Cinchona, P.S. Nathan. iv.1964 & v.1960

28. *Antrocephalus nicus* sp. nov.

(Fig. 38)

Female: Length 6.8 mm. Black with fore and mid tarsus blackish brown. Wings with brownish tinge; eyes pale blackish yellow; pubescence silvery. Head 1.22x as wide as long. Vertex depressed, in middle in front view; preorbital carina distinct; postorbital carina absent; frontogenal sulcus distinct on basal half, apical half indistinct; genotemporal furrow shallow; scrobe reaches front ocellus; relative measurements of POL : 39, OOL : 11. Antenna with length of scape distinctly more than combined lengths of segments, 4 to 7, pedicel length subequal to fourth segment; length of club

subequal to 2 x length of preceeding segment. Thorax convex, with close pits on dorsum, interstices narrow, carinate and rugose; anterior pronotal carinae distinct, not forming tubercles; apex of scutellum as in figure 38. Propodeum with deep pits with a well developed post-spiracular tooth on either side. Forewing with relative measurements of veins: postmarginal: 34; marginal :29, submarginal : 94; stigmal : 8; a brownish patch adjoining marginal vein present. Hind coxa with a well developed dorsobasal tooth; hind femur without an inner basal tooth, outer ventral margin weakly bilobed with a row of comb of teeth; gaster shorter than thorax (64 : 67), first tergite with basal carinae indistinct, a broad and shallow pit distinct, disc smooth and shiny, posterior margin not emarginate; second to fourth tergite smooth and shining on dorsal side, rugulose on sides, fifth tergite sparsely rugosopunctate; sixth tergite distinctly beset with rugose pits, gaster pubescent on posterior lateral parts.

Male: Length: 6.2 mm. Similar to female except in having pronotum with bituberculate anterior carinae, shorter antenna and shorter gaster.

Holotype: F., PHILIPPINES, Mindanao, Diapitan, C.F. Baker, 1927, (USNM). *Paratype*: M, same data as the holotype except locality Surigao of Mindano.

This is a unique species with characteristic convex thoracic notum and with a broad pit at the base of gaster on dorsal side; It is not close to any of the species so far described.

29. *Antrocephalus galleriae* Subba Rao.

Antrocephalus galleriae, Subba Rao, 1955: 948, M., INDIA, Himachal Pradesh. Shimla, (IARI) (examined).

Diagnostic features: Hind coxae black, femora externally blackish, more castaneous only round the edges; hind tibia castaneous only

distally, head a little wider than maximum length; preorbital carinae distinct; pronotum without anterior carinae and median tubercles; scutellum with a median fovea as in *mitys*, apex of scutellum emarginate; gaster without basal carina on dorsal side first tergite smooth and posterior margin straight. Hind femora, 1.78 x as long as wide, bilobed, gaster a little longer than thorax.

Host: Galleria mellonella (Pyralidae) In the hive of *Apis indica* (F).

Distribution: India, Himachal Pradesh

Materials Examined: Holotype.

30. *Antrocephalus maculipennis* Cameron

Antrocephalus maculipennis Cameron, 1905a:95, Lectotype F., Kalimantan, (BMNH No. 5-258) (examined).

This species looks similar to *Antrocephalus grisselli* in general features but differs from that species in having 1). genotemporal furrow very shallow and not as deep as that of *grisselli*, 2). forewing with somewhat faint black cloud near marginal extending to middle, beyond which is another light patch, 3). gaster length subequal to that of thorax, 4). POL distinctly less than 5 x OOL, 5). gastral tergites fourth and fifth rugose, 6) sixth tergite not distinctly pitted but mostly rugose and, 7). propodeum with convex (towards sides) submedian carinae and different types of sculptures.

The other diagnostic features of this species are: distinct preorbital carinae present; relative measurements of head width : 104, length : 86; antenna with scape reaching front ocellus, longer than combined lengths of segments four to seven; pedicel length a trifle less than length of fourth segment; ring segment about half length of pedicel; length of club 2 x length of preceding segment; frontogenal sulcus carinate; apex of scutellum well

emarginate; anterior pronotal carinae and median tubercles distinct; pits on thorax close and interstices narrow and microsculptured; propodeum with postspiracular tooth present; hind femur 2.2 x as long as wide, bilobed; relative measurements of forewing veins : submarginal : 115, marginal : 25, postmarginal : 34 and stigmal : 8. Hind coxa with a small weakly developed tubercle at basodorsal side (in some specimens this is not distinct); gaster acuminate towards apex.

Host: *Dauna catonatus* pupa

Distribution: India, Malaya, Sarawak, Sulawesi.

Materials examined: Apart from lectotype : 4 F., Sarawak Sandakan, C.F. Baker, 1927. 1 M., SULAWESI (Celebes), Makasar, Nauman, date: unknown from pupa of *Dauna catonatus*, 1 F., INDIA : Kerala, Calicut University Campus, Narendran, 20 .ii. 1981, 1 F., Kerala, Kayamkulam, Narendran & Party; 10.v.1986. 1 F., MALAYSIA, Pahang dist., Kuala Tahang, G.L. Gressitt. 7-14.xii. 1958.

31. *Antrocephalus nigrus* (Masi)

Sabatiella nigra Masi, 1929 : 168, Lectotype (here designated). F., Borneo, (USNM No. 41890) (examined).

Masi has given a good description and figures of the species. He based the species on 2 male specimens collected by Baker from Borneo (Kalimantan). I selected a lectotype from the two. This is very similar to *A. cariniceps*, but differs from it in having basal gastral carinae absent on dorsum and in having relatively longer postmarginal vein (about twice of marginal) and in having different sculpturing of propodeum.

Host: Unknown.

Distribution: India, Kalimantan, Malaysia, Sabah.

Materials examined: Apart from the primary types : 1 F. INDIA, Kerala, Calicut University campus, Narendran & Party, 7.viii.1986. 2 M, Sabah, Sandakan, C.F. Baker, 1927. 1 M, Malaysia: Negril, P & M Baker, 24.v.1979.

32. *Antrocephalus hypsiphylae* sp. nov.

(Fig. 39)

Female : Length: 7.57-8.66 mm. Black; legs and antennae usually with liver brown tinge, wings hyaline, veins pale brown (without any brown patch adjoining marginal). Head width 1.05 x its length; relative measurements of POL: 36, OOL: 8; preorbital carinae distinct, faintly joining auricular carinae; vertex slightly depressed in anterior view; postorbital carinae and genotemporal furrow absent; frontogenal sulcus indistinct; scrobe reaching front ocellus; right mandible with two teeth; left mandible with three teeth; antenna with scape reaches front ocellus, distinctly longer than the combined lengths of segments four to seven, pedicel a little less than twice length of ring segment, length of club a trifle over twice length of preceding segment. Thorax with anterior pronotal carinae present, not forming definite median tubercles, pits on median portion of scutellum and mesoscutum not close, interstices broader than diameter of pits, shagreened. Apex of scutellum distinctly bilobed. Propodeum strongly declined with deep pits and sublateral carinae. Forewing with relative measurements of veins: postmarginal: 41, marginal: 16, stigmal: 5, and submarginal: 131. Hind coxa with a weak dorsal tubercle or tooth; hind femora without an inner basal tooth. Length of hind femur about twice its width. Gaster (Fig 39) distinctly longer than thorax; pre-epipygeal part less than 1.5 x length of epipygium basal carinae indistinct; tergites 1 to 5 smooth and shiny on dorsal sides; sixth tergite with shallow distinct pits; epipygium with a median carina

Male: Unknown.

Host *Hypsiphyla robusta* (Moore) (Pyrilidae), *Phyciodes radiata* Nymphalidae) and *Tetrastia maticulosalis* Guen., (Pyrilidae)

Holotype: F, INDIA, Uttar Pradesh, Dehra Dun, ex pupa of *Hypsiphyla robusta* on *Toons*, Coll. unknown, vi.1965. (DZCU) *Para-types*: 1F., same data as that for holotype, 1F., INDIA, Tamil Nadu, Coimbatore, x-ex. *Phyciodes radiata*, Coll. Unknown, 6 I.1922, (USNM). 1F., MALAYA Kolalumbur, ex. *Tetrasia metriculosalis*, coll. Unknown, 13.viii. 1947, (BMNH)

Remarks: This species comes extremely close to *A. acutiventris* (Masi) in appearance but a careful and close analysis will reveal that this differs from *acutiventris* in having 1). pre-epipygeal part of gaster less than one and half times length of epipygium (whereas in *acutiventris* it is more than 2.5 x epipygium). 2). in having forewings hyaline without a brownish patch near adjoining marginal vein, 3). postmarginal a trifle over 2.5 x marginal (in *acutiventris* it is a trifle over 1.5 x marginal 4). apex of scutellum deeply incised (in *acutiventris* it is distinctly produced posteriorly and weakly emarginate and 5). different shape of scutellum, 6). ventral lobe of hind femur without a sharp proximal lobe as in *acutiventris*, 7). POL a little over 4 x OOL, (whereas in *acutiventris* it is a little less than 4 x OOL and 8). genotemporal furrow absent whereas in *acutiventris* a deep furrow present.

33. *Antrocephalus grisselli* sp. nov.

(Fig. 40, 41)

Female : Length 6.25-6.80 mm. Black ; eyes and ocelli pale yellow; fore and mid legs liver brown in most parts; ventrolateral margins of gaster often with slightly liver brownish tinge; wings hyaline without brownish tinge; marginal vein with very slight infuscation below Body with sparse white pubescence. Head width 1.18 x its length; relative measurements of POL : 35, OOL : 6. Preorbital carinae well developed, slightly joining auricular carinae; between lateral margins of scrobe and preorbital carinae, a distinct additional auricular on either side present, running upwards but not reaching median level of frons; postorbital carinae absent; genotemporal furrow present; scrobe reaching front ocellus; frontogenal sulcus well carinate on

(ventral half, weakly carinate on dorsal half. Antenna with length of scape unusually long, longer than combined lengths of segments four to eight, slightly broader at apex; length of pedicel a trifle less than length of fourth segment; ring segment a trifle less than half of length of fourth segment; length of club a trifle over 1.5 x length of preceeding segment. Thorax with distinct anterior pronotal carinae, not forming median tubercles; pits on thorax close and interstices ecarinate, as broad as diameter of pits or still broader in median parts of mesoscutum, scutellum and scapulae, interstices faintly striate; apex of scutellum as in figure 40. Propodeum with distinct submedian and sublateral carinae and distinct areolae, lateral teeth indistinct. Relative measurements of forewing veins : postmarginal : 28, marginal : 20, submarginal : 102 and stigmal : 6. Hind coxa with distinct tooth on basodorsal side, hind femur (Fig. 41) without an inner basal tooth. Gaster distinctly longer than thorax; length of pre-epipygeal part of gaster distinctly more than 3.75 x median length of epipygium; basal gastral carinae on dorsal side not distinct: first to fifth tergites smooth on dorsal side, pubescent and punctured on sides; sixth tergite with shallow distinct pits; epipygium a little less than 1.5 x median length of sixth tergite with dense brown pubescence.

Male : Unknown.

Holotype : F., PHILIPPINES, Los Banos, Coll. C.F. Baker, 1927, (USNM), *Paratypes* : 2F., of same data as that of holotype. 1 F., JAVA, Jacobson, viii. 1913 (RNHL).

Remarks : This species comes very close to *A. acutiventris* and *A. hypsiphylae* but differs from them in following features : 1). relative measurements of median lengths of sixth tergite and epipygium 16 : 22 in this species (in *acutiventris* 16 : 32 and in *hypsiphylae* 7 : 43), 2). apex of scutellum quite different from *acutiventris* and *hypsiphylae*, 3). POL a trifle less than x OOL in *grisselli*, (a little less than 4 x OOL in *acutiventris* and in *hypsiphylae* POL 6 x OOL).

34. *Antrocephalus acutiventris* (Masi)

(Fig. 42,43)

Tainania acutiventris Masi, 1929 : 159, Lectotype F., (here designated),
PHILIPPINES, Mindanao, (USNM No. H. 1892) (examined).

Masi's original description is good enough for identification of this species. It resembles *A. hypsiphylae* and *A. grisselli* but can be separated from them by the remarks given under those species.

Host : Unknown.

Distribution : Philippines.

Materials examined : Primary types.

35. *Antrocephalus atratus* Masi

(Figs 44,45)

Antrocephalus atratus Masi, 1926 : 228, Lectotype F, (here designated),
Formosa (DEI) (examined)

This species also comes near *A. acutiventris* and *A. grisselli* but can be separated by using the key given above.

Host : Unknown.

Distribution : Taiwan (Formosa)

Materials examined : Primary types.

UNPLACED SPECIES**36. *Stomatoceroidea indicus* Mani**

(Fig. 386)

Stomatoceroidea indicus Mani, 1936 : 471 F., INDIA : Waltair
(ZSI ?) lost ?

I could not examine the type of the species though I searched for the type in Zoological Survey of India, Calcutta. Except for a slide containing the antenna (Fig. 386) of the type, other parts were missing. These parts may be probably lost and the original description did not help in identifying the species.

The following are main points taken from the original description:

Female : Length : 4.75 mm. Black; antennae reddish brown; legs dark reddish brown, hind femur somewhat lighter, gaster reddish; wings hyaline. Head slightly broader than thorax; antennae as in figure 386. Apex of scutellum bidentate; forewing with postmarginal vein equal to or very slightly longer than marginal; gaster oval, nearly equal to the body in length; style-like posterior prolongation about half length of rest of gaster.

37. *Antrocephalus indicus* Husain & Agarwal

Antrocephalus indicus, Husain & Agarwal, 1982a : 325, F., INDIA, Uttar Pradesh, Aligarh, (ZDAMU) (examined)

I examined the holotype which is in poor condition, without hind legs. It resembles the genus *Oxycoryphe* but difficult to determine without the hind legs. It has no pronotal carinae or tubercle and pre orbital carinae is not as in *Antrocephalus*. Apex of scutellum is weakly emarginate. The host is said to be *Marasmia trapezalis* Guen. (Pyralidae).

2. Genus **KRIECHBAUMERELLA** Dalla Torre

(Figs. 46- 68, 397-403)

Coelops Kriechbaumer, 1894 : 316-317 Type species *Coelops palpebrator* Kriechbaumer ; by monotypy. Preoccupied by *Coelops* Blyth 1849

kriechbaumerella Dalla Torre, 1897 : 84 Replacement name for *Coelops* Kriechbaumer.

According to Boucek (1988) *Eucepsis* Steffan (1953) is a synonym of *Kriechbaumerella*. However Steffan in one of his communications to me (Steffan per. comm. 1986) stated that he does not think at all that *Eucepsis* is a synonym of *Kriechbaumerella*. Since it is thus a matter of controversy, I am treating *Eucepsis* in this under the name *Kriechbaumerella* only tentatively. *Kriechbaumerella* is characterised by the following features: frons with distinct horse-shoe like carina as in *Antrocephalus*. Pronotum with anterior carinae absent or restricted to lateral third only. Ventral margin of hind femur with three lobes of comb of teeth. It comes very near the European *Steffanisa* Boucek in the structure of hind femur. (Through the kindness of Dr. Jan Macek of National Museum of Prague I could examine the type which is not in good condition: head and one leg stuck to one label separately. However the frons does not have horse-shoe-like keel and not as concave as in *Kriechbaumerella*) Members of this genus are mostly parasites of pupae of Lepidoptera. This genus is found in Africa and Asia.

KET TO ORIENTAL SPECIES (FEMALES) OF

KRIECHBAUMERELLA DALLA TORRE

1. Postmarginal vein distinctly longer than marginal (Fig. 52); postorbital carina present and running behind posterior margin of eye towards dorsal side..... 2
- Postmarginal shorter than marginal or at the most as long as marginal, never as in the alternate; postorbital carina not as above 6
2. Epipygium and ovipositor sheath (Fig. 46, 48) long; first gastral tergite with dense microsculptures on dorsal side 3
- Epipygium and ovipositor sheath as in figures 51, 53; first gastral tergite smooth without microsculptures on dorsal side; if microsculptures present then only faintly represented restricted to posterior half..... 5

3. Forewing with two distinct brown patches and in-between a round hyaline spot; interstices of pits on mesoscutum and scutellum narrow and rugose; hind femur and tibia usually red (occasionally hind femur with a black patch in middle); first funicular segment of antenna red **DESTRUCTOR** (Waterst.)
 - Forewing with only one brown patch (near marginal vein); other characters may or may not be different.....4
4. Apex of scutellum characteristically projected posteriorly as in figure 47; interstices of pits on thorax narrow and rugose; sixth tergite rugospunctate, pits shallow; head and body black ...
 **AYYARI** (Gahan)
 - Apex of scutellum (Fig.49) not as above; interstices not narrow, often broader than diameter of pits or at least half as broad as diameter of a pit, smooth and shiny; sixth tergite distinctly pitted, pits deeper than in alternate; hind femur mostly or entirely red....
 **MANSUES** (Nik.)
5. Forewing without black patch or infuscation near marginal; scutellum very convex with apex as in figure 50; first gastral tergite faintly microsculptured on posterior half; (sape of male without a deep groove); gaster as in figure 51, nearly subglobose
 **GIBSONI** sp. nov.
 - Forewing with two brown patches as in figure 52; first gastral tergite not microsculptured on dorsal side; sape of male with a deep groove as in figure 54 ; gaster (Fig. 53) not subglobose ..
 **CORDIGASTER** R.&F.
6. Gaster distinctly shorter than thorax; apex of scutellum (Fig. 55) with small lobes, not with pointed apex.....
 **RUFIMANUS** (WIK.)
 - Gaster distinctly longer than thorax; apex of scutellum with pointed lobes (Figs. 56,59).....
 7

7. Mesoscutum and scutellum very concave (Figs- 56, 57); scrobe not quite reaching front ocellus; scrobe shallow.....**NEPALENSIS** sp. nov.
 — Not as above.....8
8. Marginal vein less than twice postmarginal: POL about 10 x OOL; hind femur red and hind tibia black.....9
 — Marginal vein distinctly longer than twice postmarginal; hind femur colour pattern different; POL usually less than 10 x OOL10
9. Long and concave gena (Fig. 58); narrow temples; deep frons; apex of scutellum as in figure 59 **JAVENSIS** sp. nov.
 — Gena (Fig 60); vertex and temples not as in alternate; apex of scutellum as in figure 61 **TITUSI** sp. nov.
10. Propodeum with distinct granules; areolae and sublateral carinae open towards posterior side as in figure 62 11
 — Propodum without distinct granular surface (Fig. 65) in areolae, sublateral carinae well marked..... 12
11. Antennae, fore and mid legs completely rufous; hind femur black with base usually (often apex also) rufous; hind tibia with base and apex rufous; maximum diameter of eye in profile 2.5 x length of frontogenal sulcus..... **ORNATIPENNIS** (Cam.)
 — Antennae not completely rufous; fore and mid legs not as above; hind femur and tibia completely black; eye length in profile distinctly less than 2.5 x frontogenal sulcus.....**PULVINATUS** (Masi)
12. Temples not narrow (Fig. 63); apex of scutellum (Fig. 64) with small lobes; propodeum as in figure. 65.....**KALA** sp. nov.

- Temples narrow (Fig. 66); apex of scutellum deeply emarginate as in figure 67 ; propodeum as in figure 68
 KRAUSSI sp.nov.

1. *Kriechbaumerella destructor* (Waterston)

(Fig. 46)

Antrocephalus destructor Waterston, 1922 : 64, Lectotype, F., INDIA Dehra Dun, (BMNH) type no. 5-271 (examined).

Eucepsis longigaster Roy & Farooqi, 1984 : 21, F. INDIA, Pusa (Bihar), (IARI), (examined) **syn. nov.**

Diagnostic features: *Female*: Length 7-8.24 mm. Head width a little more than 1.5 x its length. POL a trifle less than 6 x OOL; temples not narrow; frontogenal sulcus three fourth length from base carinate; ecarinate near compound eyes; preorbital carinae present, but not raised as in *ayyari*; postorbital carinae present, running upwards; genotemporal furrow absent; scape reaching front ocellus, as long as combined length of segments 4 to 7. Thorax with distinct close pits and interstices narrow, microsculptured; apex of scutellum weakly emarginate; propodeum without lateral teeth; relative measurements of forewing veins: submarginal: 60, marginal : 12, postmarginal : 14, Hind coxa with a tooth on basodorsal side; hind femora without an inner basal tooth. First gastral tergite emarginate posteriorly, distinctly microsculptured. Second tergite microsculptured and emarginate posteriorly; third to fifth tergites shagreened with pits on posterior dorsal parts and on sides; sixth tergite rugosopunctate; epipygium and ovipositor sheath as in figure 46. Gaster distinctly longer than thorax.

Male: Length 4.1 - 5 mm. Similar to female except for the stouter antenna and shorter gaster.

Host : *Hypsiphyla robusta* (Moore) (Pyralidae).

Distribution : India.

Materials examined: Apart from primary types: 8 F., 5 M., INDIA, Dehra Dun, Coll. Unknown, vi. 1965 & 1966, v. 1967, from *Hypsiphyla robusta* pupa on Toon (*Cedrela toona* Roxb)

Remarks: I am unable to separate *longigaster* from *destructor* on specific characters. I believe both are the same.

2 *Kriechbaumerella ayyari* (Gahan)

(Figs. 47 & 48)

Stomatoceras ayyari Gahan, 1919 : Lectotype F., (here designated) INDIA, Coimbatore, (USNM no. 22285 (exmined).

Antrocephalus indicatus Husain & Agarwal, 1982a: 333, M., INDIA: Madhyapradesh, Bhopal (ZDAMU) (examined) *syn. nov.*

Diagnostic features: *Female*: Length, 8-8.5 mm. Black; eyes pale yellowish, with black patches; tip of antennae, fore tarsi, fore femur and mid tarsi black with liver brown tinge. Wings hyaline, with brownish tinge, deep blackish brown infuscations adjoining marginal vein. Head width about 1.2 x its length; POL 5 x OOL; preorbital carinae raised, not quite reaching frontogenal sulcus. Postorbital carina faintly indicated, running upwards; genotemporal furrow absent; frontogenal sulcus carinate except near eyes; scrobe reaching front ocellus. Antenna with scape reaching front ocellus, longer than combined length of segments 4 to 7, length of club 1.4 x length of preceeding segment. Thorax with distinct deep and close pits, interstices narrow, microsculptured, ecarinate; apex of scutellum as in figure 47; propodeum perpendicular to body axis, without lateral teeth. Hind coxa with a well developed tooth at basodorsal side, hind femora without an inner basal tooth. Forewing with relative measurements of veins: postmarginal: 32, marginal: 21, submarginal: 127 and stigmal: 7. Gaster with first tergite distinctly microsculptured on dorsal side, posterior margin straight, second tergite to fifth tergite on dorsal side with larger pits on dorsolateral parts; sixth tergite rugosopunctate, epipygium carinate at middle, longer than median ledgth of sixth tergite.

Remarks: The holotype of *indicatus* is a male of *ayyari*

Male: Length 5-5.25 mm,

Host: *Parasa lepida* (Cramer) (Limaecodidae)

Distribution: India, (Tamil Nadu)

Materials examined: Apart from primary types, 3 F. & 1 M., Tamil Nadu, Coimbatore, P.S Nathan viii. 1962; ix. 1963; xi. 1969! xi. 1968; ix. 1953. vii. 1951. 1 F., Coimbatore, P.J Joy, 3.i. 1970.

3. *Kriechbaumerella mansues* (Nikolskaya)

(Fig. 49)

Antrocephalus mansues Nikolskaya 1952 : 98 F. USSR (ZMMS).

I have not come across any specimen belonging to this species from Oriental region. Roy & Farooqi (1984) reported this species from Delhi. Otherwise it is mostly found in Europe and Mediterranean region.

Diagnostic features: Hind femora mostly or entirely red; in male sometimes blackish outside (but internally always reddish); distance between outer margins of lateral ocelli exactly as long as one-third of width of head; cheeks behind frontogenal carina broader than high; pre and postorbital carinae present; genotemporal furrow absent; propodeum with postspiracular teeth present; hind coxa with a dorsobasal tooth; apex of scutellum as in figure 49.

Host: Unknown.

Distribution: Europe, Mediterranean region, Central Asia and India (?).

Materials Examined: 1 F., CYRRUS, Yermosoyia river banks, Mavromostakis, 4. viii. 1949. 1 F., PALASTINE, Bytinski-Salz 2.vi. 1943. 1 M., ISRALE, K.M. Guichard, 15. v. 1975.

4. Kriechbaumerella gibsoni sp. nov.

(Figs. 50,51, 397)

Female: Length: 5.34 - 5.54 mm. Black; antennae, legs, tegulae and ventral part of gaster slightly liver colour. Wings hyaline without brownish or blackish patches or infumation; pubescence white. Head (Fig.397) width distinctly more than 1.25 x its length; relative measurements of POL : 36; OOL : 11. Preorbital carina well developed joining with auricular carina; postorbital carina indicated, running upwards without meeting posterior genotemporal margin; scrobe not reaching front ocellus; genotemporal furrow absent; interantennal projection broad. Frontogenal sulcus ecarinate. Antenna with scape not reaching front ocellus, as long as combined lengths of segments four to eight; length of club a trifle less than 1.5 x length of preceeding segment. Pronotum with distinct umbilicate close pits, interstices rugose, anterior margin with carinae confined to lateral thirds only, posterior margin with distinct premarginal carina. Mesoscutum with pits smaller and closer near anterior margin, interstices rugose and narrow on anterior part, scutellum very convex, interstices of pits wider than diameter of pits on median regions, apex as in figure 50. Hind coxa with a weak tooth on basodorsal side, length of hind femur about 1.7 x its width, without an inner basal tooth. Forewing with relative measurements of veins : postmarginal 27, marginal : 17, Submarginal : 90, stigmal : 7. Propodeum with postspiracular teeth weakly indicated; median areola with irregular median carina. Gaster (Fig.51) length a trifle shorter than thorax; first tergite with faint microsculptures at posterior part; second tergite with a few scattered pits on laterodorsal area, remaining part of second tergite faintly microsculptured; sixth tergite shallowly and distinctly pitted, interstices rugose.

Male: Length : 3.72 - 4.29 mm. resembles female in all features except the following : antenna reddish and stouter, ring segment shorter, scape yellow and shorter, first gastral tergite more distinctly microsculptured,.

Holotype: F., INDIA: Tamil Nadu, Coimbatore, P.S Nathan, viii.1953. *Paratypes*: 1 F, 2 M. same data as for holotype except dates : viii.1952 and ix.1953. (All types in BSRI)

Remarks: This new species resembles *K. cordigaster* in general appearance but differs from it in having 1). more convex scutellum, 2). gaster with first tergite microsculptured on posterior dorsal half in female and fully microsculptured in male, 3). propodeum with postspiracular tooth not well represented, 4). scape of male antenna without a groove, 5). forewing without black patch near marginal vein and other parts. Apart from this. nature of sculpturing on propodeum and gaster differ in both species. The proportion of POL to OOL and wing veins also differ.

5. *Kriechbaumerella cordigaster* (Roy & Farooqi)

(Figs.52-54, 398-399)

Eucepsis cordigaster Roy & Farooqi, 1984 : 19, 1 F, INDIA:Shillong (IARI) (examined)

Diagnostic features: Preorbital carinae distinct; postorbital carinae weakly represented, not quite running upwards; interantennal projection broad; scrobe reaching front ocellus; genotemporal furrow absent; apex of scutellum weakly emarginate; male antenna (Fig. 54) quite stout with a characteristic groove; female gaster length subequal to length of thorax with first tergite smooth and polished above with distinct pit at base.

Host: Unknown.

Distribution: INDIA: Shillong

Materials examined: Apart from Holotype and Paratypes : 2M, 3F, INDIA, Shillong, Collector Unknown, 27.x.1962, emerged from pupa of unidentified caterpillar.

6. Kriechbaumerella rufimanus (Walker)

(Fig.57)

Halticella rufimanus Walker, 1860 : 357 Lectotype M., SRILANKA (Ceylon) (BMNH) (examined)

Halticella inficiens Walker, 1860 : 357, Lectotype M. SRILANKA (Ceylon) (BMNH-no. Hym. 5-2823) (examined) **syn. nov.**

Hockeria keralensis Mani & Dubey, 1974: 8, M., INDIA; Kerala, Achankovil, (USNM) (examined) **syn. nov.**

Eucepsis brevispinosa Roy & Farooqi 1984 : 17, F., INDIA : Surat (IARI) (examined) **syn. nov.**

After studying the types of *inficiens* and *keralensis* I came to the conclusion that they are the same of *rufimanus*. The type of *brevispinosa* as well as several other specimens (both females and males) were also studied in depth and found out that *brevispinosa* is nothing but *rufimanus*.

Diagnostic features: Preorbital carinae distinct; postorbital carinae indistinct; genotemporal furrow absent; apex of scutellum (Fig. 55) bilobed; gaster sborter than thorax, first tergite smooth and shiny in female, in male microsculptured or shagreened. Hind femur black or liverbrown or testaceous.

Host: Unknown

Distribution: India, Pakistan, Sri Lanka, Nepal, Philippines. Indonesia and Java

Material examined: Apart from above mentioned primary types the following also examined: 3 F., 9 M., INDIA Kerala, Calicut University Campus, Narendran & Party 1985 - 1986. 9 M., Kerala, Malampuzha, Narendran & Party, 14-15.i. 1986. 1 M., Kerala, Thekkady, Narendran & Party, 11.v. 1986. 1 F., 1 M., Kerala, Nilambur. coll. 1980, 14.ii.1985. 3 M., Kerala, Trichur, Mannuthy,

Ag. Uni. campus, Narendran & Party, 30.x.1985., 1 M., Calicut Chathamangalam, Narendran & Party, 22.xi.1985. 1 M., Uttar Pradesh, S.S. Islam, 2 vii.1983;. 1 M. New Delhi, IARI campus. Narendran. & Party 6-vii-1986; 1 M. 1F. Rajastan, Jeypore. x-1958; 2F. 3 M, Tamil Nadu, Coimbatore, Nathan, x. 1955, viii. 1957,iv, 1962, xi. 1962. 2 M, NEPAL, Simra, Adhabhar, 23-26.1967. 2 M., SRI LANKA, Nilgala Uva Province, P.B. Karunaratne, 14.vi.1968. 1 M., NEPAL, Okkampitiya, 1-10.xii. 1967. 1 M., SRI LANKA, Nugegoda. Karunarathene, 1.v.1970. 1.M., INDONESIA, Curno Gillespie, 14-21.ii. 1980. 11 M., JAVA, Bogor, J.v.d. Vecht 1929, 24.ix 1953, v.1954. 1M., W. PAKISTAN, Lahore. J. Maldonado, vii-viii.1957. 1M., PHILIPPINES; Mindanao, Baker, 1927. 2M., INDIA, Assam, Dehrady, 10. xii.1943. 1M., INDIA, Karnataka, Bangalore R.J. Swami, 5.vi.1980.

7. *Kriechbaumerella nepalensis* sp. nov.

(Figs. 56, 57, 400, 401)

Female: Length: 3.46 mm. Black; eyes pale yellowish brown; ocelli brown; base and apex of scape, pedicel, first two following segments and apical part of club light pink; all trochanters, bases and apices of fore and mid femora, bases and apices of fore and mid tibiae and all tarsi brown; apex of hind coxa on ventral side. base of hind femora and ventral part of apex of hind tibia brown; tegulae brown. Apex of gaster slightly pinkish. Wings hyaline with two blackish infuscation, one adjoining marginal and other beyond stigmal and postmarginal. Pubescence sparse and dirty white. Head 1.2 x as wide as long, distinctly wider than thorax; vertex very narrow; scrobe shallow, not reaching front ocellus, upper margin confluent with frons; eyes minutely pubescent, frontogenal sulcus weakly represented, ecarinate; preorbital carina weakly represented; postorbital carinae and genotemporal furrow absent; relative measurements of POL : 24, OOL : 5. Antenna with scape reaching front ocellus, a little longer than combined length of segments of four to eight: length of club a trifle over 1.5 x length of preceeding segment; length of pedicel subequal to length of fourth

segment. Thorax convex with umbilicate close pits, interstices smooth and shiny, not carinate, half as wide as diameter of pits in median parts of mesoscutum and scutellum; scutellum convex (Fig. 57) with apex emarginate (Fig. 56), with teeth diverging. Propodeum with distinct sublateral and lateral carinae and distinct well marked areolae;. Forewing with postmarginal hardly longer than stigmal or subequal to stigmal (distal end of postmarginal not clearly delimited). Hind femur 1.83 x as long as wide (Fig. 400), without an inner basal tooth. Gaster (Fig. 401) distinctly longer than thorax; first tergite smooth and shiny with a small pit at base; second tergite smooth and shiny with shagreening and sparse pubescence at sides, its posterior margin slightly concave; sixth tergite not with distinct pits but distinctly microsculptured all over with silvery pubescence on sides; epipygium carinate at middle, about as long as maximum length of sixth tergite.

Holotype : F., NEPAL, Kathmandu, Godavari, Coll. Unknown 4.vi.1967 (BSRI). *Paratypes*: 4 M. Same data as for holotype except 14-26.vii. 1967. 1 F., INDIA, Tamil Nadu, Annamalai Hills, Cinchona, P.S. Nathan iv. 1956.

Remarks : This species differs from all other Oriental species in having 1), relatively very convex scutellum, 2) scrobe shallow, not distinct on upper side; 3). vertex very narrow and 4), apex of scutellum with characteristic diverging teeth.

8. *Kriechbaumerella javensis* s.p. nov.

(Figs. 58, 59, 402)

Female: Length: 4.26 mm. Black; first funicular segment rufous; all legs except hind tibiae and hind tarsi rufous; tegulae brown. Forewing with two large brownish black infuscations, one near marginal vein and other beyond postmarginal, with a white spot of white pubescence inbetween. Pubescence on body white. Head (Fig. 58) width subequal to width of thorax; temples very narrow; relative measurements of POL : 30, OOL : 3.5; frons concave; scrobe reaching

front ocellus, preorbital carinae weakly developed; postorbital carinae and genotemporal furrow absent; gena somewhat concave; frontogenal sulcus distinct but not carinate. Antenna with scape reaching front ocellus, a little longer than combined length of segments four to seven; pedicel length a trifle over 1.7 x length of ring segment; length of club a trifle over 1.5 x length of preceeding sement. Thorax with pits close and interstices narrow, not carinate, rugulose in most areas (smooth in some regions); apex of scutellum (Fig. 59) deeply bifurcated; propodeum with distinct submedian carinae, accessorial carinae indistinct; sublateral carinae distinct; postspiracular tooth prominent, areolae granulate on surface. Forewing with relative measurements of veins: submarginal: 110, marginal: 31, postmarginal: 21, and stigmal : 6. Hind coxa with a small tooth on basodorsal side; hind femur without an inner basal tooth. Gaster (Fig. 402) distinctly longer than thorax (73 : 61); basal tergite smooth and shiny with a short pair of carinae delimiting a pit inbetween at base, posterior margin slightly concave at middle; second and third tergite smooth and shiny with faint shagreening on sides; sixth tergite rugosopunctate, pubescent; epipygium carinate at middle, pubescent: ovipositor sheath pubescent.

Male : Unknown.

Holotype : F., W. JAVA, Bogor, Kusawah, Coll. J.v.d. Vecht, v.1954 (RNHL)

Remarks: This species can be distinguished from all other Oriental species by its long and concave gena, narrow temples; deep frons.

9. *Kriechbaumerella titusi* sp. nov.

(Figs. 60, 61, 403)

Female: Length: 3.89-5.4 mm. Black; all femora, all trochanters and hind coxae rufous; fore and mid tibiae liver reddish; fore and mid tarsi pale brown; tegulae brown with blackish tinge; eyes grey or pale yellow (in some specimens slightly blackish or brownish).

Forewing with two pale infuscations and a white round spot inbetween. Head (Fig.60) with vertex and temples not narrow; height of eye in profile a little over 1.5 x length of frontogenal sulcus; preorbital carinae distinct; postorbital carinae and genotemporal furrow absent; frontogenal sulcus carinate on ventral half; relative measurement of POL : 31, OOL : 3. Antenna with scape length a trifle over 4 x length of pedicel; a trifle over combined length of segments four to seven; length of club a trifle over 1.7 x length of preceding segments. Thorax with close pits, interstices narrow, ecarinate, rugulose; apex of scutellum as in figure 61. Propodeum with submedian and sublateral carinae distinct, postspiracular tooth well developed. Forewing with relative measurements of veins : submarginal : 112, marginal : 32, postmarginal : 17, stigmal : 7.5. Hind coxa with a small basodorsal tooth; hind femur without an inner basal tooth. Gaster (Fig 403) longer than thorax (58 : 49) basal tergite smooth and shiny, basal carinae hardly visible, posterior margin very slightly emarginate or almost straight; second tergite smooth and shiny with microsculptures on dorsal and lateral parts; sixth tergite regosopunctate;

Male : Unknown.

Holotype : F, INDIA : Kerala, Nilambur, Coll, Narendran & party, 4.v.1985 (DZCU). *Paratypes*: 3 F., of same data of holotype 3 F., Feroke, Narendran & Party, 5. xi. 1985, 27.xi. 1985. 6 F., Kerala, C.U. Campus, Narendran & Party, 1985-1986. 1 F., Kerala, Parappanangadi, Narendran & Party, 25.i.1987; 1 F., Kerala, Peechi, Narendran & Party, 29.x.1985. 1 F., Calicut, Chaliyam, Narendran & Party, 24.x.1987. 3 F., Kerala Ag. University, Trichur, Narendran & Party, 30.x.1985. 1 F., Calicut, West Hill, Narendran & Party, 25.v.1987; 3 F., Calicut, Kallai, 25.v.1987. 2 F., Java. Bogor, J. Stusak, 3.xi.1965, 1 F., JAVA, Bogor, J.v.d. Vecht, 5.x.1953. 4 F., INDIA, Pondicherry, Karikkal, P.S. Nathan ii. 1962. 1 F., Land Dramaga, Buitangorg, J.v.d. Vicht, 19.ix.1936, 1 F. Celebes (=Sulawesi), C. Franssen, date unknown.

Remarks : This species resembles *javensis* but *javensis* differs from this as well as other species by the character given under remarks of that species.

10. *Kriechbaumerella ornatipennis* (Cameron)

(Fig. 62)

Halticella ornatipennis cameron, 1902 : 439, F., INDIA, Deesa (BMNH no. HYM.-5-253) (examined).

Eucepsis longispinosa Roy & Farooqi, 1984 : 22, F., INDIA : Bihar, Pusa, (IARI) (examined) **syn. nov.**

The holotype of *longispinosa* is a variant form of *ornatipennis* in colouration. Otherwise it is the same as the lectotype of *ornatipennis*.

Diagnostic features; Antennae rufous or liver brown; ventral part of gaster rufous; forewing with two brown small patches and a white spot inbetween; head with preorbital carinae distinct; postorbital carinae absent; genotemporal furrow absent; scrobe reaching front ocellus; antennae with slender scape, long pedicel, ring segment longer than broad; thorax with close pits, on dorsum, interstices narrow, rugose, not very carinate; apex of scutellum with two sharp and acute teeth; propodeum (Fig. 62) with surface granulated; longer than thorax. Forewing with postmarginal about one-third marginal, about twice stigmal. Hind coxa with a basodorsal tooth; hind femora without an inner basal tooth. Gaster longer than thorax, acuminate at apex; first tergite less than half of gaster, smooth on dorsal side, posterior margin straight; second tergite microsculptured on latero-dorsal side; sixth tergite rugosopunctate.

Host : Unknown.

Distribution : India

Materials examined: Apart from primary types of *ornatipennis*. and *longispinosa* : 1 F., INDIA, Uttar Pradesh, Aligarh, Islam, July 1983; 1 F., INDIA, Calcutta, Salt Lake area, S.K. Gupta, 6.xii.1987; 1 F., 1 M., Kerala, Walayar (S. Malabar). P.S. Nathan, ix. 1959. 1 F., Tamil Nadu, Narendran & Party, 23.ix.1987. 1 F., Tamil Nadu, Nilgiris Nathan, x. 1958; 12 &, 4M, Coimbatore, Nathan 1950-'63 1 F., INDIA, Pondicherry, Nathan ii. 1982.

11. *Kriechbaumerella pulvinatus* (Masi)

Antrocephalus pulvinatus Masi, 1932 : 232, Lectotype (here designated)
F., Formosa, Kankau (MCSG) (examined).

This is extremely close to *ornatipennis* except for the characters mentioned in the key.

Host: Unknown.

Disiribuition: Taiwan, India, Philippines, Singapore, Malaya, SRILANKA, Hainan Island, Nepal and Java.

Materials examined: Apart from the primary types: 1 M., SRI LANKA, Egodapiliga, Karunaratne, 1-3.vi.1968. 47 M., 30 F. PHILIPPINES, Baker, 1927. 1 F. PHILIPPINES, Tacibanm H. Townes, 12.vii.1952. 2 F., INDIA, Coorg, Nathan, May 1951. 2 F., PHILIPPINES, Townes & Family 1952; 1 F. SINGAPORE, Baker, 1927. 1 M., 1 F., PHILIPPINES, Manila, Lozon, Mac George, 21.viii, 1944. 1 F., 2 M., PHILIPPINES, Manila, Robert Brown, date unknown; 1 M., 1 F., MALAYA, Selangor, Typhus Unit, August 1949. 1 F., INDIA: Marmagoa, U.C. Bridevell, date unknown. 1 F., COCHINCHINA, coll. Poilane, 16.vii.1931. 1 F., HAINAN ISLAND, Lenganan University, 5th expd. July 1929. 78 F., 76 M., INDIA, Kerala, Narendran & Party, 1985-'86. 1 F., 1 M., NEPAL, Aug. 1967. 1 F., 1 M., Nilgris, Nathan, 1954-1961. 2 F., 1 M., MALAYA, Bun gan, Ph. Prank, 15.x. 1976. 2 M., 3 F., JAVA, Bogor, Vicht, 1953. 1 F., JAVA, Samonag, Jacobson, 1909.

12. *Kriechbaumerella kala* sp. nov.

(Figs. 63-65)

Female : Length: 4.06-4.26 mm. Black; eyes pale yellow with pale black tinge; tegulae rufous; fore and mid femora, fore and mid tibiae liver brown with base and apex rufous; fore and mid tarsi brown; base of hind femur slightly rufous. Forewing with two pale brown infuscations and a middle white spot. Pubescence

white. Relative width of head, 110, length : 107, relative measurement of POL : 24, OOL : 3 ; scrobe reaching front ocellus; preorbital carina distinct; postorbital carinae and genotemporal furrow absent; frontogenal sulcus distinct but ecarinate. Antennae with scape reaching front ocellus, length subequal to combined length of segments four to seven; length of club less than 2 x length of preceeding segments. Thorax with dorsal pits close, interstices narrow, ecarinate, rugose; apex of scutellum as in figure 64. Propodeum as in figure 65 with surface of areolae granulated. Forewing with relative measurements of veins: submarginal: 108, marginal : 40, postmarginal : 15 and stigmal : 7. Hind coxa with a small tooth on basodorsal side; hind femur without an inner basal tooth. Gaster longer than thorax (69 : 62); basal tergite smooth and shiny with two short basal carinae; each carina shorter than width between them; second tergite smooth and shiny with pubescence and pits on sides; third to fifth shagreened with scattered pits and pubescence on sides; sixth tergite rugosopunctate; epipygium carinate at middle.

Male: Length : 3-4 mm. Resemble female in all respects except having first tergite punctate, antennae stoutish, scape not quite reaching front ocellus; scrobe interrupted near front ocellus.

Holotype F, PHILIPPINES, Mindanao, Surigao, C.F. Baker, 1927 (USNM). *Paratypes*: 1 F, of same data of holotype; 1 M., PHILIPPINES, Negros, Cuernos Mts. Baker, 1927. 1M., MALAYA, Silanger, N.H. Krauss, Feb. 1949 (all above types in USNM) 12 F, 10 M, w. JAVA, J.v.d. Vecht, 1953-1955 (RNHL) . 1 F., MALAYA, Pahang, Pulan, Kuncheria, 18-20. iii.1962 (BBM).

13. *Kriechbaumerella kraussi* sp. nov.

(Figs: 66-68)

This species is extremely close to the species *kala* and differs from it in having the following features:

Female: Length : 4.23 mm. Relative measurement of POL 36, OOL 6, temples (Fig. 66) less thicker than *kala*; frontogenal sulcus carinate; antenna with scape distinctly longer than combined lengths of segments four to seven; thorax with apex of scutellum (Fig. 67) deeply bifurcated; propodeum as in figure 68. Relative measurements of forewing veins: submarginal 115, postmarginal 19; marginal 40, stigmal 6. Gaster relatively more wider in dorsal view than that of *kala*.

Male : Unknown.

Holotype : 1 F., CAMBODIA, Siem Resp. NLH. Krauss, xi 1958 (USNM). *Paratypes*: 1 F., PHILIPPINES, Tangoolan, Bukidnon, C.F. Baker, 1927. (USNM). 7 F., INDIA, Kerala, C.U. Campus, coll. Narendran & Party 1985-1986; 1 F., Kerala, Nilambur, Narendran & Party 20.v.1985, 1 F., Thalappara, Narendran & Party 31.vii.1987.

3. Genus NEOCHALCIS Kirby

(Figs. 69-70)

Neochalcis Kirby, 1883b: 54,63. Type species : *Halticella osmicida* Saunders, by original designation.

The known synonyms are: *Orthochalcis* Kiffer (1904) and *Eugastrochalcis* Masi (1929).

This genus comes very close to *Haltichella* and *Neohaltichella* but can be easily separated from them by the characters given in the key to genera above. The striking features of this genus are : Ventral margin of hind femur with a characteristic dent (Fig. 70) : gaster long and pointed with characteristic dense punctures; in some groups head strongly tilted to ventral side in dead specimens (*Eugastrochalcis*). Head strongly transverse in many species; This genus is found in Mediterranean region, Africa, Europe, and Asia. One species in Europe is parasitic on the bee *Osmia tridentata* Duf.

1. *Neochalcis breviceps* (Masi)

(Figs. 69, 70)

Eugastrochalcis breviceps Masi, 1929 : 182, Lectotype F., (here designated), PHILIPPINES, Basilan Island (USNM No. 41294) (examined)

Hockeria maetai Habu, 1969 : 338, F., JAPAN : Hoshu (NIAS) **syn. nov.**

Eugastrochalcis secundus Mani & Dubey 1964 : 6. F., INDIA : Cardamom Hills (USNM) (examined) **syn. nov.**

This is a very variable species. The black colour of antennae, legs and gaster changes to liver brown in many specimens and in extreme case the black colour of thorax becomes liver brownish. In black stout specimens the forewings are with brownish tinge with distinct SM cross veins, Media and Cu1. In smaller slender specimens these are not distinct. Similarly, the convex shape of scutellum is very variable in this species. In larger specimens the scutellum is convex while in smaller specimens the convex nature is reduced and in some cases to flat condition. A series of intermediate stages are met with in several specimens collected from all over Oriental Region and this enabled me to know the wide variation existing in this species. The type of *secundus* was examined by me during my study stay at USNM and I cannot separate it from *breviceps* on specific characters. From the excellent original description and figures of *Hockeria maetai*, it is evident that the species is nothing but *breviceps* (Masi). The Japanese *Neochalcis yoshiokai* Habu (Comb. nov.) however differs from *breviceps* in having the apex of scutellum entire; longer propodeum, and first tergite without inverted-cordate polished area.

Host: Unknown.

Distribution: Oriental Region, Japan.

Materials examined: Apart from primary types of *breviceps* and *secundus* : 1 F, SRILANKA, Rojovak, Krombein & Karunaratne,

20.vi-1976. 67 M., 24 F., INDIA, Kerala Calicut University Campus, Narendran & Party, 1985-1987. 3 F., INDIA, Kerala, Silent Valley, coll. Narendran & Party, 16.v.1985. 1 M., Kerala, Periyar wild life sanctuary (Thekkady), Narendran & Party, 12.v.1985. 2 M., Kerala, Malampuzha, Narendran & Party, 12.i.1986. 4 M., 2 F., Kerala, Parambikulam, Narendran & Party, 15.xii.1925, 6 M., 1 F., Kerala, Peechi, Narendran & Party, 29.x.1985, 5 M., 1 F., INDIA, Tamil Nadu, Annamalai Hills, Nathan, iv.v, 1964, v.1959, iv.1956, v.1966. 4 F., 1 M., Tamil Nadu, Nilgiri Hills; tNathan, 1956-1961. 1 F. 2 M., Karnataka, S. Coorg, P.S. Nathan, v 1961, iii.1952. 1 M., Pulu Pond Jang, E. Jacobson, 5.1913. 1 M., PHILIPPINES, Negros, C.F. Baker, 1927. 1 M., PHILIPPINES, Manila, Mc Gregory, vi.1919 1 F., TAIWAN, Wushus, H. Townes, 19.iv.1983. (In addition to the above, several other specimens present in other museums also examined).

UNPLACED SPECIES

2. *Neochalcis myrmeleone* Mani

(Fig. 387)

Neochalcis myrmeleone Mani 1936 : 470, F., INDIA, Madras, (lost ?)
(antenna in ZSI) (examined)

I searched for four days for the holotype of *myrmeleone* at ZSI and could find only one slide containing a single antenna of the type. The remaining part is probably lost. Steffan (1959) pointed out that this may be *Lasiochalcidia*. Since I am not sure of the identity of this species and the type (except the antenna) is not available for study I am keeping this species under 'unplaced species for the time being.

The following are the main points taken from original description: *Female*: Length: 1.5-2.0 mm. Body very dark reddish brown; antenna yellowish brown; legs reddish brown; gaster reddish brown. Head about as broad as thorax; OOL a little more than diameter of lateral ocellus; antenna as in figure 387. Punctures on thoracic notum not very close; gaster shorter than thorax.

3. *Neochalcis cinca* W. Fernando

Neochalcis cinca W. Fernando, 1957 : 214. F, SRI LANKA, (Syntypes lost ?).

I could not examine the types of *cinca* inspite of my efforts to procure them and enquiries remained mostly unanswered. The description is very poor and reveal only too general features and I am unable to place this species to the correct taxa now. This may be *Lasiochalcidia*. The following are main points taken from the original description : *Female* : Length : 2.46 mm. Black; antennae yellowish brown; legs reddish brown. Head slightly wider than thorax; OOL double diameter of lateral ocellus; scape about three quarter length of funicle; pedicel little longer than first funicular segment; succeeding segments becoming broader but not appreciably short; club longer than pedicel, apex of scutellum with two small teeth; gaster with first segment smooth, about half size of entire gaster. Bred from the cocoons of ant-lions.

4. Genus *HOCKERIA* Walker

(Figs. 71-108, 304-410)

Hockeria Walker, 1834 : 21, 34. Type-species "*Chalcis bispinosa*" Fabricius" sensu Kirby (= *Hockeria bifasciata* Walker) designated by Kirby 1883.

Nipponohockeria Habu, 1960: 220, 234-235. Type-species *Nipponohockeria ishii* Habu by original description. **syn. nov.**

The known synonyms are : *Stomatoceras* Kirby (1883b), *Temnata* Cameron (1897), *Centrochalcis* Cameron, (1905b), *Hypochochalcis* Girault (1915a), *Orthochalcis* Silvestri (1943), *Afrochalcis* Schmitz (1946) *Hockerella* Girault (1930) and *Afrhockeria* Steffan (1955).

Habu (1960) included *Irishohalticella* Cameron (1912) and *Stomatoceroideis* Girault (1913b) as synonyms of *Hockeria*. However

Boucek (1988) considered the genus *Trichohalticella* as a valid genus and synonymized *stomatoceroides* with *Antrocephalus* Kirby. The two genera viz *Hockeria* and *Antrocephalus* are extremely close and one often finds it difficult to determine some intermediate forms. The concavity of frons, nature of outer ventral margin of hind femur and short postmarginal vein are features sometimes found to overlap with some species of *Antrocephalus* or in *Hockeria*. In some *Hockeria* (*lankana* & *bangalorica*) postmarginal is relatively long and in some *Hockeria* frons is slightly concave (*bangalorica*). The vertex is extremely thin in some species of *Hockeria*. The carinae present on gaster is variable in this genus. In some cases two extremely short carinae are present (*argentigera*) or in some others they may be tricarinate (*manii*) or the gaster may be ecarinate as in most species or polycarinate (*scutellata*, *polycarinata*). Hence the genus *Nipponohockeria* cannot be considered as separate genus on valid characters. Members of *Hockeria* are mostly parasitic on Lepidoptera. *Hockeria* is found in America, Europe, Africa, Asia & Australia.

KEY TO ORIENTAL SPECIES OF *HOCKERIA* WALKER (FEMALE)

1. First tergite of gaster with atleast a minimum of three to maximum ten distinct relatively long carinae at base (Figs. 72,75,76) 2
- First tergite of gaster without such carinae as in the alternate; if carinae present then such carinae shorter than distance between them 4
2. Scutellum unusually convex (Fig. 71), high in profile; gaster (Fig. 72) about 1.2 x as long as thorax; characteristic pubescence on axillae, near notauli and on lateral sides of posterior margin of pronotum *SCUTELLATA* sp. nov.
- Scutellum not as above; gaster subequal to thorax or slightly longer than thorax 3

3. Base of first tergite of gaster with about ten carinae (Fig. 75); hind coxa reddish brown; hind femora reddish brown with base and apices paler; hind tibia reddish brown with apex paler **POLYCARINATA** sp. nov.
- Base of gaster with three long carinae and several small carinae (Fig. 76); hind coxa black; hind femur black with base and apex brown; hind tibia black with apex brown slightly..... **MANII** sp. nov.
4. Petiole distinct (Fig. 81) from dorsal view. relatively longer than in alternate.....5
- Petiole not as above; gaster sessile.....8
5. Head unusually convex, mesoscutum usually shiny and convex on posterior part in female; parasites on *Amblypalpis olivierella* Ragonet from galls of *Tamarix*..... **TAMARICIS** Boucek
- Not as above.....6
6. Eyes sparsely pubescent; scrobe not deep, almost at the same level of parascrobal space, striated on upper half; scutellum width distinctly less than one and one fifth its length; hind coxa without a tooth or carina at dorso-basal side; hind leg and gaster completely black..... **ARGENTIGERA** Holmg.
- Not as above; characters partly or completely different..... 7
7. Hind femora black, base light reddish brown; hind tibia black with apical part reddish brown; gaster black; scutellum as in figure 8 2(extralimal)..... **AMAMIOSHIMENSIS** Habu
- Hind femora and tibiae blackish brown; gaster reddish brown on sides & ventral part; scutellum as in figure, 83..... **NIKOLSKAYAE** H. & A.

8. Postmarginal distinct, very long, at least twice as long as stigmal or longer.....9
 - Postmarginal not as above, distinctly, shorter or rudimentary or longer 10
9. Gaster distinctly shorter than thorax; postmarginal vein shorter than marginal; pre and postorbital carina indistinct; apex of scutellum (Fig. 78) bilobed; hind femora liver brown; antenna of female as in figure 77.....**LANKANA** sp. nov.
 - Gaster distinctly longer than thorax; postmarginal distinctly longer than marginal; pre and postmarginal carina distinct; apex of scutellum (Fig. 80) not as in alternate; hind femur blackish brown with base and apex yellowish brown; antenna of female as in figure 79.....**BANGALORICA** sp. nov.
10. Forewings without brown or black infuscations; frons convex; scutellum as in figure 85; preorbital carinae distinct; vertex (Fig. 84) broad.....**ANUPAMA** sp. nov.
 - Forewings always with brown or black bands or infuscations; other characters partly or wholly different.....11
11. Mesopleura, inside of pits of metapleura, and surface of propodeal areolae (Fig. 86) with characteristic and prominent granulations; first tergite distinctly microsculptured.....**TRISTIS** (Strand)
 - Not as above; characters partly or completely different; if granulations present in areolae of propodeum then never extended to mesopleura.....12
12. Vertex extremely narrow, thin; antennal club with peculiar granular ventral surface; epipygium long (Fig. 87).....13
 - Not as above; partly or completely different.....14
13. First gastral tergite smooth, epipygium longer than sixth tergite when measured from dorsal side; forewing as in figure 87; temples extremely narrow; hind femur 1.7 x as long as its

- maximum width; granular area of club with ridges.....
**MENONI** (Narendran)
- First gastral tergite densely microsculptured, epipygium a trifle shorter than sixth tergite; forewing as in figure 88; temples not as narrow as above; hind femur 1.9 x as long as its maximum width; club without ridges; propodeum with a median carina (Fig. 89)..... **CARINATA** sp. nov.
14. Outer ventral margin of hind femur three lobed: apex of scutellum and forewings as in figs 90 & 91.....
**GRISSELLI** sp. nov.
- Not as above; partly of completely different.....15
15. Propodeum with both lateral teeth absent or indistinct.....16
- Propodeum with both lateral teeth present and distinct.....22
16. Forewing with proximal black band splitted into two by a white or hyaline streak.....17
- Forewing not as above..... 20
17. Forewing with a clear white spot with white pubescence near stigmal vein (Fig. 92), distally a less white spot; propodeum and hind femur as in figures 93 & 94; parasitic on *Opisina arenosella* Walker.....**OPISINAE** sp. nov.
- Not as above; characters partly or completely different
 18
18. Propodeum & hind femur as in figures 95 & 96
**ALIGARHENSIS** R. & F.
- Not as above.....19
19. Propodeum and hind femur as in figures 97 and 98
**HAYATI** sp. nov.
- Propodeum and hind femur as in figures 99 and 100
 **NIPPONICA** Habu

20. Base of first gastral tergite with a distinct punctate area (Fig. 104) both in male and female; frons not unusually convex (Fig. 103) **ASSAMENSIS** sp. nov.
 — Base of first gastral tergite never punctate in female; frons may or may not be convex 21
21. Frons unusually convex (Fig. 101); maximum length of vertex (Fig. 102) a trifle over 1.6x POL; antennal scape liver brown with base and apex pale yellow; funicle a little over 2.25 x length of scape **FRONTA** sp. nov.
 — Frons not as above; vertex length distinctly less than 1.6x POL; antennal scape black or liver brown **ATRA** Masi
22. First tergite of gaster with a squamous sculpture; hind femur exactly twice as long as its width; propodeum without median carinae; median area very narrow; scutellum as long as broad...
 **BRACHYGASTER** Boucek
 — Not as above; characters partly or completely different..... 23
23. Forewing with two distinct white spots (Fig. 106); propodeum with accessorial carinae distinct; post-spiracular teeth present but not prominent; 24
 — Not as above..... 25
24. Scape and scrobe reaching front ocellus; propodeum without median carinae; ventral margin of hind femur distinctly bilobed, proximal lobe not more prominent than distal one
 **PULCHELLA** Masi
 — Scape and scrobe not reaching front ocellus; propodeum with median carinae; ventral margin of hind femur with a distinct prominent dent; distal lobe weak..... **CALLIPTEROMA** sp. nov.
25. Hind femur (Fig. 107) with proximal lobe very large; scrobe and scape not quite reaching front ocellus; gaster distinctly longer than thorax; propodeal areolae not granulated
 **GIBSONI** sp. nov.

- Hind femur (Fig. 108) with proximal lobe not as above; scape and scrobe reaching front ocellus; gaster length subequal to thorax; propodeal areolae granulated.....**GUPTAI** sp. nov.

Unplaced species in the key for want of details

1. *Hockeria sativa* (Husain & Agarwal)
2. *Hockeria varitarsis* (Cameron)
3. *Stomatoceras ephialtes* Fernando

1. *Hockeria scutellata* sp. nov.

(Figs. 71, 72, 404, 405)

Female: Length: 2.58 mm. Black; scape, pedicel and first funicular segment yellowish brown; eyes greyish yellow; fore and mid legs yellowish brown; hind coxa blackish red; hind femur and tibia rufous; gaster blackish dorsally and rufous ventrally and laterally; tegulae yellowish brown; forewing with two large black (Fig. 404) bands and two white spots (one spot adjoining stigmal and the other at median region of posterior side. Head width 1.28 x its length, distinctly wider than maximum width of thorax; vertex and temples somewhat narrow; frons not concave; relative measurement of POL: 36, OOL: 10, preorbital carinae faintly indicated; postorbital carinae absent; scrobe shallow, striated not reaching front ocellus; genotemporal furrow absent; frontogenal sulcus only faintly indicated. Antenna with length of scape subequal to combined length of segments 4-8; pedicel longer than fourth segment; ring segment half as long as pedicel; club length about 2 x length of preceding segment. Thorax with close pits and narrow interstices on pronotum, ecarinate and rugulose. Mesoscutum with interstices smooth and wider than diameter of pits on middle region, other regions with narrower and rugulose interstices. Scutellum (Fig. 71) characteristically very convex, pits close, interstices narrow, rugose, apex weakly emarginate, Propodeum with distinct submedian and sublateral carinae, accessorial carinae absent, postspiracular teeth slightly indicated.

Forewing with postmarginal indistinct. Hind coxa without a dorsal tooth or carina; hind femora ventral margin distinctly bilobed. Gaster (Fig. 72) distinctly longer than thorax (90 : 78) ; first tergite with five carinae at base, smooth and shiny. Second to fifth tergites smooth and shiny on dorsomedian regions, microsculptured and pubescent on sides. Sixth tergite not pitted, rugulose. Epipygium carinate at middle, densely pubescent; visible part of ovipositor sheath subequal to median length of epipygium.

Male : Unknown.

Holotype : F., PHILIPPINES, Los Banos, C F. Baker, 1927 (USNM). *Paratypes*: IF. PHILIPPINES, Palawan, Panitian, Delfiando, 6.v.1967 (BBM).

Remarks : This is a remarkable species which differs from all other Oriental species in having 1). unusually convex scutellum, 2). base of gaster with five carinae, 3). forewing with two distinct white and round spots surrounded by black infuscation and 4). sixth tergite impunctate but rugulose.

2. *Hockeria polycarinata* sp. nov.

(Figs. 73-75)

Female: Length: 3.06 mm. Black; eye pale yellow with middle black patch; antennae liver brown with scape and first three funicular segments yellowish brown; tegulae yellowish brown. Forewing with one obscure brown patch near marginal vein and another subapically, area between these two patches form two spots of white cilia, lower spot partially open ventrally. Fore and mid legs yellowish brown with dark patches on middle outer region of femur and tibia; fore coxa black. Hind coxa black with apex reddish brown ventrally; hind femur black with base and apex reddish brown; hind tibia reddish brown with middle ventral margin black which extends towards dorsal region; hind tarsi reddish brown. Gasteral sternite reddish brown. Head one and one-fourth times as

wide as its own length; scrobe striated, not reaching front ocellus, margins ecarinate, not deep, almost at level of parascrobal space; relative measurement of POL : 14, OOL: 5; frontogenal sulcus distinct but ecarinate; genotemporal furrow absent; pre and postorbital carinae absent. Antennae with scape not reaching front ocellus, length a trifle less than combined length of segments 4 to 8; pedicel longer than fourth segment; ring segment about half length of pedicel; club length a trifle over 1.75 x length of preceeding segment, Thorax with pits on notum close, interstices narrow, not distinctly carinate; apex of scutellum broadly emarginate with two weak lobes; propodeum as in figure 73. Hind coxa without a tooth or protuberance on dorsobasal side; hind femora and tibia as in figure 74. Gaster a trifle shorter than length of thorax; first tergite with several basal carinae as in figure 75, smooth on disc, sixth tergite with dense faint pits.

Male : Unknown.

Holotype : F., JAVA, Coll. unknown, 20.vi. 1961 (USNM).

Host : *Proceras la rva*

Remarks : This species resembles *Hockeria ishii* (Habu) (Comb. nov.) in general appearance but differs from that species in having different pattern of basal carinae of gaster; apex of scutellum emarginate; hind femur with two large ventral lobes and propodeal structure entirely different.

3. *Hockeria manii* sp. nov.

(Figs. 76, 406)

Female : Length: 1.79-3.2 mm. Black; scape (in some paratypes pedicel, ring segment and fourth segment also), fore trochanter, base and apex of fore femur and fore tibia (mid tarsi pale yellow), base of hind femur, a spot at apex of hind femur, apex of hind tibia and hind tarsi rufous. Forewing with black infuscation and two round white spots in between, the ventral (posterior) one open ventrally. Head width 1.25 x its length; pre and postorbital carinae

absent ; genotemporal furrow absent; frontogenal sulcus well carinate on ventral half, weakly carinate on dorsal half. Relative measurement of POL : 23, OOL : 5.5; eyes bare; height of eyes in profile 1.83 x length of frontogenal sulcus; scrobe about same level of parascrobal space, not at all reaching front ocellus. Antenna with scape length longer than combined length of segments four to seven, shorter than combined length of segments four to eight; pedicel length subequal to length of fourth segment; length of ring segment a trifle less than half length of fourth segment, segments fourth to seventh gradually increasing in width; length of club a trifle over twice length of preceeding segment. Thorax with close pits on dorsum, interstices narrow, rugose; apex of scutellum distinctly and broadly emarginate (lobes weak) (Fig. 76); propodeum as in figure 76. Hind femur and tibia as in figure 406. Gaster length subequal to thorax; first tergite smooth and shiny, with 3 short carinae (Fig. 76) at base and several short rugae; second and third tergites smooth on dorsal side, shagreened on sides; fourth tergite hardly visible from dorsal side; fifth tergite rugose; sixth tergite rugose, not pitted.

Male : Length : 1.73—2.84 mm. Similar to female except for longer antennae and shorter gaster.

Holotype : F., INDIA, Kerala, Paroppady (Nr. Calicut), Coll. Narendran & Party 5.v.1987. *Paratypes* : 15F., 23 M., INDIA : Kerala, Calicut University Campus, 1985—1981.

Remarks : This species differs from *Hockeria ishii* Habu in having three basal carinae of gaster and emarginate apex of scutellum. The relative measurements of antenna 1 segments also differ.

4. *Hockeria lankana* sp. nov.

(Figs. 77 & 78)

Female : Length : 3.41 mm. Black; antennae, legs gaster and tegulae liver brown. Forewing with 2 black bands and an inverted triangular hyaline area in between nearer to stigmal vein. Head width 1.22 x its length; wider than thorax; vertex depressed when

viewed from front; relative measurement of POL : 35, OOL : 6. Vertex and temples not narrow; preorbital carinae indistinct; postorbital carinae absent; scrobe almost at same level of parascrobal space, not reaching front ocellus; frontogenal sulcus carinate on ventral half; scape almost reaching front ocellus, antenna as in figure 77. Thorax with close pits; interstices narrow, rugose, moderately carinate; apex of scutellum (Fig.78) emarginate; propodeum with distinct submedian and sublateral carinae; postspiracular teeth not distinct; forewing with postmarginal about twice stigmal, shorter than marginal, hind coxa without a dorsobasal tooth; hind femora length 1.72 x its width, outer ventral margin with a distinct median dent. Gaster distinctly shorter than thorax (30 : 36); first gastral tergite smooth and shiny, a pair of extremely short and minute carinae faintly indicated at base; second tergite smooth and shiny on dorsomedian portion, microsculptured and sparsely pubescent laterally; tergites three to five rugose; sixth tergite not distinctly pitted, rugose; epipygium very short, shorter than half of median length of sixth tergite; ovipositor sheath slightly visible from dorsal side.

Male: Length: 1.73 mm. Similar to female except in having following features: antenna slender, gaster shorter, wings without black infuscations; first gastral tergites microsculptured on disc; body more darker.

Holotype : F., SRI LANKA (=Ceylon), Nilgala, Uva Province, Coll. Karunaratne, 1-14.vii.1968, (BSRI). *Paratype*: 1M, SRI LANKA, Nugegoda, W. Prov., Coll. Karunaratne, 6.vi.1970 (BSRI).

5. *Hockeria bangalorica* sp. nov.

(Figs. 79, 80, 407)

Female: Length: 2.7-3.41 mm. Black; scape, pedicel, ring segment, first funicular segment, fore legs, mid legs and tegulae yellowish brown; hind femora yellowish brown basally and apically, middle portion blackish brown; hind tarsi brown; gaster blackish brown

on ventral side; eyes pale yellow. Head width about 1.1 x its length, wider than maximum width of thorax; relative measurements of POL : 19, OOL : 2; frons with scrobe slightly deep, not reaching front ocellus; preorbital carinae distinct; almost reaching frontogenal sulcus; postorbital carinae present, running upwards behind posterior margin of eyes; frontogenal sulcus distinct, ecarinate; genotemporal furrow absent. Antenna (Fig. 79) with scape a little more than 3 x length of pedicel, a little more than combined length of segments four to seven. Length of ring segment a trifle less than one third length of pedicel, a trifle over half length of fourth segment; fifth segment longer than fourth; subequal to sixth; length of seventh segment equal to sixth segment, a little over length of eighth segment, ninth and eighth subequal in length, length of club 1.66 x length of preceeding segment. Thorax with close pits on dorsum, interstices narrow, rugose, ecarinate; scutellum not convex somewhat flat, apex as in figure 80. Propodeum with distinct submedian and sublateral carinae, accessorial carinae absent, lateral costae distinctly carinate, postspiracular teeth indistinct; space inside pits smooth. Forewing with relative measurements of veins; submarginal : 60, marginal : 13, postmarginal : 19, stigmal : 4.5. Hind coxa with a weak short carina near base on dorsal side; hind femora weakly bilobed on outer ventral margin. Gaster distinctly longer than thorax (96:78); first tergite with very short carinae at base, each carina shorter than space between them, first tergite smooth and shiny; second and third tergites smooth medially and dorsally, shagreened and sparsely pubescent on sides; fourth and fifth tergites rugose; sixth tergite rugose, not pitted; epipygium carinate at middle, about twice middle length of visible part of ovipositor sheath in dorsal aspect.

Male: Length 2.13 to 3.04 mm. Resembles female except in having longer antennal segments and forewing without infuscations.

Holotype: F., INDIA : Bangalore, Coll. Parvath, 17.ix.1983 (DZCU). *Paratypes:* 1 F., INDIA, Karnataka, Coorg, Coll. P.S. Nathan, ii.1952, (AEI). 41 F., & 59 M., MALAYSIA, S, Negri, Coll. P & M Baker, 1978-1980 (AEI).

Remarks: The reddish colour often tends to become blackish in Malaysian specimens, especially on legs. This is a colour variation.

6. *Hockeria argentigera* Holmgren.

(Fig. 81)

Hookeria argentigera Holmgren (misspelling for *Hockeria*), 1869 : 436, F., Lectotype, JAVA, (NRS) (examined).

Holmgren described the species basing on two females; both are different species. The one female which closely fits to his description is selected as lectotype by Boucek. The other paralectotype belongs to an undescribed species which is described by me in this work as *Hockeria grisselli*.

Diagnostic features: Female. Length 2.84 to 3.7 mm. Black; eyes pale yellow; fore and mid tarsi pale brown; forewing with black bands and a round white spot near stigmal. Head width 1.24 x its length, wider than maximum width of thorax; relative measurements of POL : 23, OOL : 6.5; pre and postorbital carinae absent, genotemporal furrow absent, scrobe reaching front ocellus; eyes sparsely pubescent, height of eye in profile twice length of frontogenal sulcus. Antenna with scape reaching front ocellus, distinctly less than combined lengths of segments 4 to 7; ring segment half length of pedicel, length of club a little less than twice length of preceeding segment. Thorax with pits close on corsum, interstices narrow rugose, ecarinate; apex of scutellum broadly emarginate and bilobed. Propodeum with submedian and sublateral carinae; lateral teeth indistinct. Forewing with postmarginal absent. Hind coxa without dorsobasal tooth or carina; hind femur length 1.77 x its median length, its dorsal margin slightly angulate on median portion. Gaster (Fig. 81) longer than thorax (49 : 39); a very distinct short petiole visible (Fig. 81); first tergite with 2 distinct very short carinae at base; first tergite smooth and shiny on dorsal side; second tergite smooth on dorsomedian part, microsculptured on sides.

Male: Length: 1.65-3.12 mm. Similar to female except in having antenna shorter and longer. Gaster shorter. first gastral tergite slightly shagreened in large specimens.

Host: Unknown.

Distribution. India, Java, Singapore, Sarawak.

Materials examined: Apart from the primary types about 200 females and 250 males collected from south of Malabar by Narendran & Party during 1985-87. 1 M., SINGAPORE, C.F. Baker, 1927. 1 M., SARAWAK, Ng. Nada, 2.ii.1975. 1 F., INDIA, Nilgiri Hills, P.S. Nathan, iv.1961.

7. *Hockeria amamioshimensis* Habu

(Fig. 82)

Hockeria amamioshimensis Habu, 1960: 161, F, JAPAN, (NIAS).

This is an extralimital species. I include this species here because this may be present in the Oriental Region and extremely close to *Hockeria nikolskayae* Husain & Agarwal. *Hockeria argentigera* also resembles *amamioshimensis* in having a distinct visible petiole but differs by the characters mentioned in the key above. The original description is good enough to recognize the species.

Host : Unknown

Distribution : Japan.

8. *Hockeria nikolskayae* Husain & Agarwal

(Fig. 83)

Hockeria nikolskayae Husain & Agarwal, 1982a: 319, F, INDIA, Aligarh, (ZDAMU) (examined).

This is extremely close to *Hockeria amamioshimensis* except colouration of hind legs and gaster and eventually may be regarded as a variety of *amamioshimensis* when better known.

Host: *Spilosoma obliqua* Walker (Lepidoptera, Arctiidae).

Distribution: India,

Materials examined: Holotype mentioned above.

9. *Hockeria anupama* sp. nov.

(Figs. 84, 85)

Female: Length: 1.82 mm. Black; scape, pedicel, ring segment, first funicular segment, all tarsi, bases and apices of fore and mid tibiae, and bases and apices of fore and mid femora testaceous; mid regions of fore tibiae, fore femora, mid tibiae, and mid femora liver brown; hind femora liver brown; hind tibia liver brown with apex testaceous; eyes pale yellowish. Forewing hyaline with veins pale brown. Head width about 1.1 x its length, equal to width of thorax; vertex and temple broad; relative measurements of POL & OOL as in figure 84; frons convex, scrobe narrow and shallow, not reaching front ocellus; preorbital carinae present, not reaching frontogenal sulcus; postorbital carinae absent; frontogenal sulcus distinct but not well carinate. Thorax with close pits; interstices narrow, rugose, ecarinate; scutellum as in figure 85. Propodeum with submedian carinae distinct; postspiracular teeth absent. Forewing with postmarginal almost indistinct. Hind coxa without any tooth or carina on basodorsal side. Gaster distinctly longer than thorax (55 : 45); first tergite smooth and shiny with a pair of very short carinae at base, length of each carina less than space between them; second tergite smooth and shiny, faintly shagreened on sides; third to sixth tergite faintly shagreened; sixth tergite faintly shagreened without any distinct normal larger pit.

Male: Unknown.

Holotype: F., INDIA: Kerala, Malampuzha, Narendran & party, 16.i 1986.

10. *Hockeria tristis* (Strand)

(Fig. 86)

Antrocephalus tristis Strand, 1911a: 8. Lectotype, F., SRI LANKA, (ZMHU)

Temnata maculipennis, Cameron, 1897: 42, Lectotype, F., INDIA, Agra, (BMNH) no. Hym. 1212- $\frac{1}{2}$) (examined). (Preoccupied by *Halticella maculipennis* Steffani, 1887) **syn. nov.**

Trichoxenia zigonensis Mani & Dubey, 1973: 35, F., BURMA, Zigon. (USNM) (examined) **syn. nov.**

Hockeria nilgiriensis Mani, & Dubey, 1974: 11, F, INDIA, Nilgiris, (USNM) (examined) **syn. nov.**

Though the name *Hockeria* (= *Temnata*) *maculipennis* (Cameron) is the oldest one, it is preoccupied by the name *Halticella maculipennis* De Steffani (which is *Hockeria bifasciata* Walker). Hence the next name *Hockeria tristis* is valid for the species. I have examined the type of *Trichoxenia zigonensis* and found that it is the same as *Hockeria tristis*. The genus *Trichoxenia* Kirby is quite different from *Hockeria* with a long and hairy horizontal spine at apex of scutellum. It is found only in Australia so far. I studied the type of *H. nilgiriensis* and found it differing in no way from *tristis* Strand.

Diagnostic features: Female: Length: 4.5-5.5 mm. Black; eyes pale yellow or pale brown or dark brown; wings hyaline, two blackish brown bands and an inbetween median hyaline area; head a trifle wider than its median length, little wider than thorax; scrobe reaching front ocellus; preorbital carina present, postorbital carina absent; head, thorax and body provided with close pits, interstices narrow and characteristically microsculptured; mesopleura and propodeum (Fig. 86) with fully dense microsculptures; apex of scutellum deeply emarginate with distinct relatively sharp teeth. Forewing with post-marginal a little longer than stigmal, hind coxa without a dorsobasal tooth or carina; gaster little longer than thorax, all tergites densely microsculptured, epipygium a little longer than the median length of visible part of ovipositor sheath.

Male: Similar to female except for having shorter gaster and stouter antennae.

Host : *Pyrausta machaeralis* (Walker) (Pyralidae)

Distribution : All over Indian subcontinent.

Materials examined : Apart from the primary types of the above mentioned authors the following specimens have been collected by Narendran & party during 1984-'87 from Kerala state (INDIA) have been studied: 251 M, 35 F., Calicut University Campus; 23 M, 7 F, Malampuzha, 8 M, 1 F. Nilambur, 5 M, Parambikulam, 2 M, Feroke, 1 M, Parappanangady, 2 M, Silent Valley, 2 M, Chaliyam, 3 M, 1 F, Trichur, 3 M, Sultan's Battery, 1 M, Calicut, 2 M. 1 F, Peechi, 2 M. Thekkady. The other materials are : 4 M, Tamil Nadu, Coimbatore, Narendran & Party, 23-28 ix.1987, 10 M, 2 F, West Bengal, Calcutta, Narendran & Party, 6-12.iii.1985. 1 M, West Bengal, Barrackpur, S.K. Gupta, 12.vi.1982. 1 F, 2 M, Madras, Narendran & Party, 21.vi. 1985. Apart from this, specimens from other regions of subcontinent have been also studied.

11. *Hockeria menoni* (Narendran) comb. nov.

(Fig. 87)

Rhynchochalcis menoni Narendran, 1986b : 544, F, INDIA, Kerala (DZCU)

This is a unique species with extremely narrow vertex and temples. The antennal club has three ridges in female and ventral margin of hind femur is with a long row of comb-like teeth.

Host: Unknown.

Distribution : India.

Materials examined : Apart from the holotype and paratypes about 12 females collected from Calicut University Campus by Narendran & Party, during 1986-'87 have been examined.

12. *Hockeria carinata* sp. nov.

(Figs. 88, 89, 408)

Female: Length: 3.69 to 4.26 mm. Black: apices of fore and mid tarsi pale brown. Hind tarsi blackish brown; trochanters and tegulae brown; forewing as in figure 88. Head width 1.16 x its length, little less than maximum width of thorax; relative measurement of POL : 25, OOL : 6; vertex and temples extremely thin as in *menoni*; preorbital carinae distinct; postorbital carinae running upwards close behind posterior margin of eyes; frontogenal sulcus distinct but ecarinate; frons concave; scrobe and antennal scape almost reaching front ocellus; antenna with relative measurements of length of segments: scape : 65, pedicel : 21, ring segment : 6, fourth segment : 18, fifth segment : 13, sixth segment : 14, seventh segment : 13, eighth segment : 11, ninth segment : 10, tenth segment : 10, club : 23; ventral side of club characteristically granulated. Thorax with pits close, interstices narrow, ecarinate, rugose, scutellum with a median furrow indicated, apex distinctly (Fig. 408) bilobed, forewing as in figure 88; hind coxa without a basal tooth; hind femora bilobed, hind femur length about twice its width; propodeum as in figure 89. Gaster distinctly longer than thorax (73:63); first tergite densely microsculptured on distal one-third dorsally, basally ecarinate with a deep pit; second tergite to fifth tergites densely microsculptured, fifth tergite microsculptured, without any distinct large pit; length of epipygium twice or a trifle over twice median visible length of ovipositor sheath dorsally.

Male: Length: 2.72-3.69 mm. Resembles female except for following: stouter and longer antennae, shorter gaster, median scutellar fovea less distinct, forewing without infuscations or white spot.

Holotype: F., INDIA, Kerala, Calicut University Campus, Narendran & Party, 1.v.1987, (DZCU). *Paratypes*: 1 F., & 1 M., same data except for 4.vii.1986; 12.iv.1986; 17.ix.1985.

This comes near *H. menoni* but can be separated from it as given in the given key.

13. *Hockeria grisselli* sp. nov.

(Figs. 90, 91, 409, 410)

Female: Length: 3.41 mm. Black; fore and mid legs yellowish brown, hind coxa black, with apical ventral part reddish; hind femur black with base and apex red; hind tibia reddish brown with black tinge on ventral half on lateral aspect; tegulae yellowish brown; gaster slightly reddish ventrally, forewing as in figure 91. Head with relative measurement of POL : 25, OOL : 7; preorbital carinae weakly represented, not reaching frontogenal sulcus; postorbital carinae absent; vertex and temples narrow (Fig. 409); scrobe not distinctly reaching front ocellus; antennae with scape almost reaching front ocellus, its length a little less than combined length of segments four to eight; pedicel one third as long as scape, ring segment a little more than one third pedicel, fourth segment a little longer than fifth, length of sixth segment equal to fourth, length of seventh segment equal to sixth, length of eighth segment a little longer than seventh, length of ninth segment equal to tenth segment; length of club a trifle over length of tenth segment. Thorax with close pits; interstices narrow, rugose on pronotum and anterior part of mesoscutum; distinctly pubescent on sides of posterior margin of pronotum and on posterior margin of axillae; apex of scutellum as in figure 90. Propodeum with distinct submedian and sublateral carinae; accessorial carinae partly distinct on proximal half; areolae not granulated, postspiracular teeth present. Forewing as in figure 91; hind coxa without a basal tooth or carina; length of hind femur (Fig. 410) about twice its width, its outer ventral margin apparently trilobed, proximal lobe weak; (in paratype the proximal lobe weaker than that of holotype). Gaster distinctly longer than thorax (36:29); first tergite smooth and shiny, without basal carinae; second tergite smooth and shiny on median dorsal side, microsculptured and pubescent on sides; third to fifth tergite fully microsculptured; sparsely pubescent on sides; sixth tergite fully microsculptured, not distinctly punctured; visible part of ovipositor sheath from dorsal side subequal to median length of epipygium.

Male : Unknown.

Holotype : F., INDIA : Delhi, Oman, 18.vi, 1961, (USNM).
Paratypes : 1 F., INDIA, Tamil Nadu, Anna Malai Hills, Cinchona P.S. Nathan, iv. 1956. The paralectotype of *H. argentigera* Holmgren (Paralectotype selected by Boucek, 1980) belong to this species, (locality : Java). This species has a peculiarly shaped apex of scutellum and somewhat trilobed hind femur, scrobe also not quite reaching front ocellus.

14. *Hockeria opisinae* sp. nov.

(Figs. 92, 93 & 94)

Female : Length: 2.56 mm. Black; antennal scape, pedicel, ring segment, and first funicular segment yellowish brown; fore coxa black; fore trochanter; fore and mid tarsi yellowish brown; fore and mid femora yellowish brown, with blackish tinge medially; hind coxa black with apical ventral part slightly brownish; hind femora yellowish brown with a blackish shadow as in figure 94; hind tibia yellowish brown with ventral margin and nearby middle areas blackish. Forewing with a white spot and blackish patches as in figure 92. Head width 1.18 x its length, subequal to maximum width of thorax; relative measurement of POL : 18, OOL : 2.5; frons not concave, preorbital carinae hardly visible; postorbital carinae absent; scrobe very shallow, not reaching front ocellus. Antenna with length of scape distinctly longer than combined length of segments four to eight; pedicel longer than fourth segment, ring segment about one third length of pedicel; segment four to nine slightly increasing in width; club twice length of preceeding segment. Thorax with close pits and interstices narrow on pronotum; mesoscutum with pits on anterior marginal area coalesce, rugose, middle and posterior regions distinctly pitted with interstices smooth and wider than diameter of pits in many places; interstices not rugose, scapulae with interstices rugose; scutellum with pits close, interstices narrow, ecarinate, rugulose; apex of scutellum weakly emarginate and weakly bilobed. Forewing as in figure 92. Hind coxa with a weak carinae on dorsal side; hind femora as in figure 94. Propodeum as in figure 93. Gaster a trifle longer than thorax (47:44); first tergite with two short carinae

at base, each carina shorter than the width between the two carinae, about five or four smaller carinae present at base inbetween the two main carinae. (These smaller carinae are visible only at certain angles and light); first tergite smooth and shiny; second and third tergites smooth and shiny on dorsal side, fourth and fifth tergites not visible on dorsal side, sixth tergite not visible on dorsal side; sixth tergite distinctly rugose, pits not distinct; epipygium ecarinate at middle, visible part of ovipositor sheath about half median length of epipygium dorsally.

Male: Unknown.

Holotype: F., INDIA: Tamil Nadu, Tiruvallur, Gopichettyalalayam, 12.i 1962, Coll. Unknown, (DZCU).

Host: *Opisina arenosella* Walker (Oecophoridae)

15. *Hockeria aligarhensis* Roy & Farooqi

(Figs. 95, 96)

Hockeria aligarhensis Roy & Farooqi, 1984 : 33, F., INDIA. Aligarh, (IARI) (examined).

Diagnostic features: Pre and postorbital carinae indistinct, scrobe not reaching front ocellus, gaster slightly longer than thorax. Forewing with 2 blackish bands splitted into two by a white or hyaline area; propodeum as in figure 95. Hind femur as figure 96.

Host: Unknown.

Distribution: India.

Materials examined : Holotype and paratype : 11 F., 9 M., INDIA, Kerala, C.U. Campus, Narendran & Party 1985-86. 1 F., INDIA, Aligarh, M. Hayat, 10.x.1986.

16. *Hockeria hayati* sp. nov.

(Figs. 97, 98)

Female: Length: 3.01 - 4.4 mm. Black; (variation :black; often turning to liver colour or blackish brown or reddish brown on antennae, legs, tegulae and gaster). Forewing with two blackish brown bands, proximal band splitted into two by a white or hyaline streak. Head width 1.18 x its length, subequal to maximum width of thorax; vertex and temples not narrow; relative measurements of POL : 31, OOL : 7; preorbital and postorbital carinae absent, scrobe flat, not reaching front ocellus. antennae with scape not reaching front ocellus, relative measurement of lengths of antennal segments: scape : 45, pedicel : 9, ring segment : 6, fourth segment : 8, fifth segment : 10, sixth segment : 9.5, seventh segment : 9, eighth segment : 11, ninth segment : 7, tenth segment : 8, club : 13. relative measurements of width : pedicel : 4.5, ring segment : 4.5, fourth segment : 5, fifth segment : 6.5, sixth segment : 7, seventh segment : 7, segments eighth to club equal in width. Thorax with pits on dorsum close, interstices narrow, rugose, ecarinate, relative measurement of width of scutellum : 60, length : 54, apex broadly emarginate; minutely bilobed. Propodeum as in figure 97. Hind coxa without a dorsal tooth or carina; hind femora and tibia as in figure 98. Forewing with postmarginal little longer than stigmal, gaster length a trifle longer than thorax (41:37), first tergite smooth and shiny with a small pit at base; second tergite smooth and shiny on median dorsal part, sides microsculptured and sparsely pubescent, third to fifth tergite fully microsculptured and sparsely pubescent, sixth tergite rugosopunctate, and moderately pubescent.

Holotype: F., INDIA, Tamil Nadu, Coimbatore, Narendran & Party, 28.ix.1987. *Paratypes*: 3 F., INDIA, Kerala Malampuzha, Narendran & Party, 16.i.1986. & 11.xii.1987. 1 F., INDIA, Kerala, C.U. Campus, Narendran & Party, 7.x.1986. 1 F., INDIA, Kerala, C.U. Campus, Narendran & Party, June 1987, 1 F., INDIA, Tamil Nadu, Sugarcane Breeding Station, Coimbatore, Narendran & Party, 25.ix.1987. 1 F., INDIA : Kerala, Malampuzha, Narendran & Party, 15.i.1986.

17. *Hockeria nipponica* Habu

(Figs. 99, 100)

Hockeria nipponica Habu, 1960 : 225, F., JAPAN, (NIAS)

The original description is good enough for the identification of the species. It comes very close to *hayati*, but can be distinguished from that species by the characters mentioned in the key above.

Host: Unknown.

Distribution: India, Japan, Taiwan.

Materials examined: 1 F., INDIA, Kerala, C. U. Campus Narendran and Party, 19.viii. 1986. 2 M., same data of the holotype except for the date 1987-88. 10 F., Taiwan, Wushe, H. Townes, 4. v. 1983 (AEI).

18. *Hockeria fronta* sp. nov.

(Figs. 101, 102)

Female: Length 1.44 - 1.8 mm. Black; antenna liver brown with base and apex of scape pale yellow; fore and mid legs liver colour with apices of femora and tibiae and tarsal segments brownish yellow; hind leg black with apex of tibia and tarsi pale brown; eyes greyish; forewing with two brown bands; head width in front view 1.2x its length; distinctly wider (Fig.102) than maximum width of thorax in dorsal view; scrobe small, shallow, not at the same level of parascrobal space, not reaching front ocellus; POL a little more than 5x OOL; distance between median and lateral ocellus 3x OOL; pre and postorbital carinae absent; frontogenal sulcus carinate on ventral half; antennal scape not reaching front ocellus, distinctly less than combined length of segments two to six, distinctly less than half length of flagellum; length of club 1.4x length of preceeding segment. Thorax with shallow close pits on

dorsum, interstices narrow, ecarinate, smooth and shiny; apex of scutellum weakly emarginate; not distinctly bilobed. Propodeum with distinct submedian and sublateral carinae; postspiracular teeth indistinct. Forewing with postmarginal vein absent. Gaster distinctly longer than thorax (24:18); first tergite with a pair of very short carinae at base, without any pit inbetween, smooth and shiny; second to fifth tergites smooth on dorsal side, sparsely pubescent and rugose on lateral and dorsal parts; sixth tergite rugose, epipygium slightly carinate.

Male: Length: 1.3 to 2.1 mm. Similar to female, except in having longer antennal segment and first gastral tergite punctate at base.

Holotype: F., INDIA, Kerala, Tenjipalam, Narendran & Party, 30.iv.1985. *Paratypes*: 117 F., 105 M., collected from Kerala and Tamil Nadu by Narendran & Party during 1985-1988.

This species resembles *Hockeria atra* Masi very closely. However it differs from *atra* in having extremely convex frons, scape shorter than half of flagellum and in having relatively deeper scrobe.

19 *Hockeria assamensis* sp. nov.

(Figs. 103, 104)

Female: Length: 2.75 mm. Similar to species *fronta* in almost all features except for following: 1). frons not as convex (Fig. 103) as that of *fronta*, 2). funicle a little less than two and one-fourths length of scape, 3). scrobe not as deep as that of *fronta*, 4). forewing infumations less pronounced than in *fronta*, 5). first gastral tergite in female with distinct microsculptures at base (Fig. 104). It differs from *H. atra* in having following features: 1). funicle a little less than two and one-fourths length of scape, 2) forewing infumations less pronounced than that of *atra*, 3). first gastral tergite without microsculptures at base, 4). having frons not as convex as that of *atra*.

Male: Length 1.85 mm. Similar to female except for stouter antennae and shorter gaster.

Holotype: F., INDIA, Assam, Tinsuikia, D.E. Hardy, 29.iii.1944 (USNM). *Paratype*: M., same data as the holotype except for collection date, 13.ii.1944.

20. *Hockeria atra* Masi

Hockeria atra Masi, 1929:180, F., INDIA, Orissa, (ZSI) (examined)

Hockeria vulgaris Husain & Agarwal, 1982a:321, F., INDIA, Aligarh, (ZDAMU) (examined), **syn. nov.**

Hockeria dehradunensis Roy & Farooqi, 1984:34, F., INDIA, Dehra Dun, (IARI), (examined), **syn. nov.**

I have examined the holotypes of *atra*, *vulgaris* and *dehradunensis* and I am unable to separate them on any valid specific characters. This species closely resembles *fronta* and *assamensis* but differs from them in the characters mentioned in the key above as well as given under remarks of these two species.

Host: *H. vulgaris* is said to have obtained from *Spilosoma* sp. (Arctiidae) (Husain & Agarwal, 1982)

Distribution: India, Philippines, Java.

Materials examined: Apart from the primary types mentioned above the following specimens have also been studied: 1 F., INDIA, Kerala. Parambikulam, Narendran & Party, 14.20.ii.1985. 25 F., 6 M., collected by Narendran & Party from Calicut University Campus during 1985. 12 M., Kerala, Malampuzha, Narendran & Party, 15.i.1986. 1 F., Nilambur, Narendran & Party, 21.iv.1986. 2 F., Calicut, Narendran & Party, 24.x.1987. 1 F., PHILIPPINES, Palawan, coll. L.W. Quat, i.i.1960. 1 F., West Java, J.v.de Vecht, 20.ix.1953.

21. *Hockeria brachygaster* Boucek

Hockeria brachygaster Boucek, 1956 : 235, F., ISRAIL, Tel Aviv, (NM).

Roy & Farooqi (1984) have reported this species from India. I have not come across this species anywhere from India so far. From the original description of Boucek the following diagnostic features can be noted. Head width distinctly greater than its length. Scape not reaching front ocellus; dorsal surface of thorax not closely punctate, interstices generally about two to three times smaller than diameter of each pit, relatively shiny but with shallow transverse reticulations which is weaker on scutellum; apex of scutellum bilobed. Forewing with infuscations. Gaster as long as thorax; first gastral tergite with very shallow squamose sculptures.

Host : Unknown.

Distribution : Israil, India.

22. *Hockeria callipteroma* sp. nov.

(Figs. 105, 106)

Female : Length: 3.55-4.15 mm. Black: eyes pale yellow; antennae, legs, ventral and lateral parts of gaster liver brown (becoming black in paratypes). Forewing with dark brown infuscations with two white spots as in figure 106. Head width 1.2 x its length, equal to maximum width of thorax; relative measurement of POL:33, OOL : 12; vertex and temples not narrow; pre and postorbital carinae absent; scrobe not reaching front ocellus; antenna with scape not reaching front ocellus, relative measurement of length of segments as follows: scape : 53, pedicel : 19, ring segment : 8; fourth segment: 17, fifth segment : 18.5, segments sixth to ninth equal in length, tenth segment : 12, club : 20; segment four to eight slightly increasing in width. Thorax with close pits on dorsum; interstices narrow, somewhat carinate, rugose; apex of scutellum emarginate, bilobed,

tip of lobes not pointed, forewing with postmarginal subequal to stigmal with two distinct white spots (Fig. 106). hind coxa without a distinct dorsobasal tooth or carina.; hind femora width 1.67 x its length with proximal median tooth of ventral comb prominent. Propodeum as in figure 105. Gaster length a little less than thorax (63:67); first tergite smooth and shiny, second tergite smooth and shiny on dorsal side, sixth tergite rugosopunctate; epipygium longer than visible part of ovipositor sheath dorsally.

Male : Length: 3.6 mm. Similar to female except in having longer antennae, stouter body, shorter gaster and with first tergite micro-sculptured. Forewing with less infuscations, ventral white spot less distinct and median carina of propodeum hardly indicated.

Holotype : F., INDIA, Nilgiris, P.S. Nathan, v. 1954. (BSRI).
Paratypes: 1 F., & 1 M., with same data of holotype except for the collection date 1.v.1958.

23. *Hockeria gibsoni* sp.nov.

(Fig. 107)

Female : Length: 4.21 mm. Black; scape, ring segment, first funicular segment, fore and mid tarsi yellowish brown, fore femora and fore tibiae liver brown; mid femora and mid tibiae concolourous with fore tibia and fore femur; hind coxa, hind femur and tegulae liver brown, with disc of femur slightly more darker in the middle, hind tibia liver brown with apical part yellowish brown. Gaster yellowish brown on ventral side and on side basally. Forewing with a white round spot adjoining stigmal and with two brown bands which do not touch anal margin. Head width 1.28 x its length, subequal to width of thorax, distinctly pitted: relative measurement of POL : 24, OOL: 8; preorbital carinae weakly represented; postorbital carinae absent; frons slightly concave; scrobe not quite reaching front ocellus. Antenna with scape not reaching front ocellus, relative measurement of length of segments: scape: 64,

pedicel : 17, ring segment : 9, fourth segment : 15, fifth segment : 14, sixth segment : 13.5, seventh segment : 13, eighth segment : 10, ninth segment : 12, tenth segment : 11, club : 23. Thorax convex with distinct close pits, interstices narrow, rugose, ecarinate, apex of scutellum distinctly bilobed, lobes broad, propodeum with distinct median carina, submedian carinae convex towards sides, accessorial carinae indistinct, sublateral carinae and postspiracular teeth distinct; ground of areolae smooth; forewing with postmarginal hardly distinct; hind coxa without a distinct dorsal tooth; hind femora as in figure 107. Gaster distinctly longer than thorax (57:52); first & second tergites smooth and shiny on dorsal side; tergites 3 to 4 dorsally microsculptured and pubescent on sides; sixth tergite rugosopunctate; length of visible part of ovipositor sheath half length of epipygium; height of gaster distinctly more than half length of gaster.

Male: Length: 2.73 mm. Similar to female except for having more darker legs and gaster, antennae pale liver colour with longer segments, wings without brownish infuscations and without white spot, first gastral tergite microsculptured.

Holotype: F., INDIA, Tamil Nadu, Coimbatore, P.S. Nathan xi.1958, (BSRI). *Paratypes* : 1 F., Coimbatore, iv.1962, (collector unknown, probably P.S. Nathan) (BSRI)

This species can be distinguished by its median carina on propodeum, hind femora with large proximal prominent median dent (Fig. 107).

24. *Hockeria guptai* sp. nov.

(Fig. 108)

Female : Length: 4—4.54 mm. Black; eyes greyish; fore and mid tarsi blackish brown; forewing with two brown infuscations and a white patch near stigmal. Head width 1.27x its length, distinctly wider than thorax; vertex and temples not narrow; relative

measurement of POL : 22, OOL : 8; preorbital carinae distinct, not joining frontogenal sulcus; length of frontogenal sulcus distinctly less than half height of eye in profile; postorbital carinae absent; genotemporal furrow slightly indicated; scrobe concave reaching front ocellus; antennal scape reaching front ocellus; relative measurements of lengths of antennal segments : scape : 57, pedicel : 15, ring segment : 7, fourth segment : 14, fifth segment : 15, sixth segment : 14, seventh segment : 13, eighth segment : 12.5, ninth segment : 11.5, tenth : 9, club : 19. Thorax with close pits on dorsum, interstices narrow, rugulose, somewhat carinate on pronotum and anterior part of mesoscutum; scutellum broad, its apex distinctly bilobed; propodeum with median carina indicated, submedian and sublateral carinae irregular, postspiracular teeth distinct. Forewing with postmarginal longer than stigmal, shorter than half of marginal; hind coxa without a dorsobasal tooth or carina; hind femora as in figure 108. Gaster length subequal to length of thorax; first tergite with a pitted base, smooth, shiny not punctate; second and third tergites smooth on dorsal median area, dorsolateral side pubescent, sixth tergite rugosopunctate, epipygium length a little more than length of visible part of ovipositor sheath from dorsal side.

Male : Unknown.

Holotype : F., INDIA, West Bengal, Barackpore, S. K. Gupta, 12.vi. 1982, (DZCU). *Paratypes* : 1 F., of same data as holotype. 1 F., NEPAL, nr. Brigang, 1967, Ca. expdi., 29.viii. to 5.ix.1967, (BSRI), 1 F., MALAYA, Army scrub Typhas Unit, viii.1949, (USNM).

This comes near *H. tristis* in general appearance, but differs from that species in having non-granulated and sunken mesopleuron, smooth first gastral tergite, broader scutellum, (relative measurement of width to length : 51:45), weak and broad apical lobes of scutellum and broader vertex.

25. *Hockeria tamarisis* Boucek

Hockeria tamarisis Boucek, 1982b : 49, F. ISRAIL. (BMNH).

This comes near *H. argentigera* in having similar type of forewing colouration and having a short petiole. However it can be separated by the characters mentioned in the key above.

Host : Pupae of *Amblypalpis olivierella* Ragnot on *Tamarax* gall (Gellichidae)

Distribution : Israil, Pakistan and Saudi Arabia.

26. *Hockeria pulchella* Masi

Hockeria pulchella Masi, 1926 : 38, F., Taiwan (DEI) (examined)

This species comes near *Hockeria callipteroma* sp. nov. in almost all features except in having characters mentioned in the key above and in having head more narrower towards mouth and frons less convex than those of *callipteroma*.

Host : Unknown

Distribution : Taiwan.

Material examined : Holotype only.

UNPLACED SPECIES**27. *Stomatoceras varitarsis* Cameron**

Stomatoceras varitarsis Cameron, 1911 : 7, M., (BMNH ?)

Since I could not see the primary type of the species I am unable to determine its correct identity. The original description is too short.

The following are some of the main points taken from the description.

Male : Length : 3 mm. Black, apex of tibiae and greater part of tarsi testaceous; wings hyaline, a small cloud at stigma, another cloud between it and apex of wing. Antennal scape smooth and shiny covered with silvery pile; malar space as long as its eye, genotemporal furrow present; preorbital carinae present, running behind anterior ocellus; apex of scutellum slightly incised.

The description of preorbital carinae shows that it is similar to that of *Antrocephalus*.

Host : Unknown.

Distribution : Borneo, (Kalimantan.)

28. *Halticella tarsalis* Walker

Halticella tarsalis Walker, 1871 : 44, M. ?, INDIA, Maharashtra, (BMNH ?)

The primary types of this species could not be examined. A male specimen identified as *H. tarsalis* (Walker) present in the general collection of BMNH was examined by me. This I found to be a male of *H. tristis* (Strand). However confirmation of this synonymy needs examination of primary types of *tarsalis*.

Host : Unknown.

Distribution : India.

29. *Stomatoceras ephialtes* W. Fernando

Stomatoceras ephialtes W. Fernando, 1957 : 214, (Syntype M.) SRI LANKA, Ingiriya (UC).

I could not examine the primary types of the species inspite of my efforts. The original description is very poor and reveal

barely more than the variable colour. The scant data do not reveal any useful features. Hence for the time being I keep this under unplaced species.

Host : Unknown

Distribution : Sri Lanka.

30. *Hockeria sativa* (Husain & Agarwal) comb. nov.

Nippohockeria (!) *sativa*, Husain & Agarwal, 1982a: 321. M, INDIA, Aligarh, (ZDAMU).

I examined the single male holotype which is not in good condition. It comes near *Hockeria atra* but the real identity of the species can be determined only after studying the females of the species. The first tergite of gaster of this specimen is punctate on dorsal side. The typical characters of *Nipponohockeria* are not found in this species.

Host : Unknown.

Distribution : India.

5 Genus UGA Girault

(Figs. 109–114, 411)

Uga Girault, 1933: 4, Type species *Stomatoceras colliscutellum* Girault: by original designation.

The only known synonym of this genus is *Neotainania* Husain & Agarwal (1982). The genus is easily recognised by its strongly swollen scutellum (Fig. 112), almost semicircularly or pyramidally arched in side view; hind margin overhanging the frenum; mesoscutum highly convex and with interocellar protuberance (Figs. 109, 110, 113). Members of this genus are parasites of *Epilachna* beetles. They are found in Africa, Asia and Australia.

KEY TO ORIENTAL SPECIES OF *UGA* GIRAULT

(Modified from Kerrich, 1960)

1. Head in posterior view with strong interocellar protuberances (Fig.109): as seen from above moderately narrowed behind eyes **JAVANICA** Kerrich
- Head in hind view with interocellar protuberances of moderate strength or weak (Figs.110, 113,): as seen from above rather strongly narrowed behind eyes.....2
2. Head as seen from above, very deeply emarginate anteriorly and rather strongly rounded behind eyes (Fig.111): interocellar protuberances of moderate strength (Figs.110,411)
.....**MENONI** Kerrich.
- Head as seen from above less deeply emarginate anteriorly, and not much rounded behind eyes (Fig. 114), interocellar protuberance very weak, (Fig. 113).....
.....**SINENSIS** Kerrich

1. *Uga javanica* Kerrich

(Fig. 109)

Uga javanica Kerrich, 1960 : 116, F, JAVA, Bogor, (USNM)
(examined).

Diagnostic characters : Head seen from above broadly and deeply emarginate anteriorly. Antennal flagellum of female hardly swollen, having seventh segment slightly longer than broad: that of male distinctly tapering from second segment, having first segment 1.75x and seventh 1.25x as long as broad.

Host: Pupae of *Epilachna sparsa* sub sp. 26 - *punctata*, Boist.
(Coccinellidae).

Distribution: Java, India, Thailand.

Materials examined: Apart from the holotype and paratypes: 1 F., THAILAND, R. Hensen, 14.vii.1986. 1 F., INDIA, Kerala, Calicut University Campus, Narendran & Party, 6.ix.1985 (DZCU). 2 F., INDIA, Tamil Nadu, Anna Malai Hills, P.S. Nathan, v. 1963.

2. *Uga menoni* Kerrich.

(Figs. 110, 112 & 411)

Uga menoni Kerrich, 1960: 115, F., INDIA: Orissa (BMNH) (examined).

The known synonym is *Neotainania brevicorpi* Husain & Agarwal (1982).

Diagnostic characters: Head seen from above broadly and very deeply emarginate anteriorly, rather strongly narrowed and rounded behind eyes, antennal flagellum of female distinctly swollen, having seventh segment broader than long; of male almost cylindrical, having first segment 1.5x as long as broad and seventh a little longer than broad.

Host : *Epilachna* sp. (Coccinellidae).

Distribution: India, Taiwan.

Materials examined: Apart from holotype: 1 F., 1 M., TAIWAN Wushe, P. & M. Baker, 3-15.v.1983, (AEI). 2 M., INDIA, U.P., Dehra Dun, Coll. Unknown, July 1968 from unidentified pupa on Brinjal. 2 F., INDIA, Assam, D.E. Hardy, 30.iii.1944

3. *Uga sinensis* Kerrich

(Figs. 113, 114)

Uga sinensis Kerrich, 1960:116, F., CHINA, Canton, (BMNH) (examined).

Diagnostic features: Head seen from above strongly transverse rather narrowly and only moderately emarginate anteriorly, strongly narrowed behind eyes but not much rounded. Antennal flagellum of female distinctly swollen, having seventh segment distinctly broader than long; of male with first segment twice as long as broad.

Host: *Epilachna* sp. (Coccinellidae).

Distribution: India, China.

Material examined: Apart from holotype and paratypes: 1 F., INDIA, Kerala, Calicut, Narendran, 12.ix.1981.

6. Genus *RHYNCHOCHALCIS* Cameron

(Figs. 115-120, 412, 413)

Rhynchochalcis Cameron, 1905c:209, Type-species *Rhynchochalcis niger* Cameron; by monotypy.

This resembles *Hockeria* in general appearance but differs from *Hockeria* in having concave genal region, anteriorly produced lower part of head and micropilosity on the ventral part of antennal club, (especially in female) and in having shorter pedicel and shorter ring segment. All these characters are found overlapping occasionally in *Hockeria* also and it may eventually be regarded as a subgenus of *Hockeria* when better known. Biology: Unknown, Distribution: Africa & Asia.

KEY TO ORIENTAL SPECIES OF *RHYNCHOCHALCIS* (FEMALES ONLY)

1. Median length of epipygium 1.5x to 2x median length of sixth tergite, when measured from dorsal side.....2
- Median length of epipygium subequal to median length of sixth tergite or distinctly shorter than median length of sixth tergite 3

2. Gaster (Fig. 115) length (excluding length of epipygium and ovipositor sheath) distinctly more than maximum length of thorax at dorsal aspect, first tergite somewhat densely microsculptured; gaster with sternites, sides of first and second tergites rufous, dorsal side blackish brown; antenna (Fig. 116) slenderer than in alternate, relative measurement of POL:21, OOL:6, scape length equal to combined length of 4,5 & 6 segments. Forewing hyaline **PRUINOSA** Cameron
- Preepipygeal part of gaster distinctly shorter than thorax; first tergite mostly smooth, with very few shallow dots; gaster (Fig. 118) black, antenna stouter than above; scape distinctly longer than segments four to six combined, relative measurement of POL:29, OOL : 4.5. Forewing hyaline with blackish tinge, **THRESIAE** sp. nov.
3. Median length of sixth tergite, a little over 1.25x median length of visible part of ovipositor sheath from dorsal side; scutellum somewhat flatter than in alternate; second tergite densely pitted on posterior half; apex of scutellum deeply incised (Fig. 119).... **LANKANA** sp. nov.
- Median length of epipygium distinctly shorter than median length of sixth tergite, about twice visible part of ovipositor from dorsal side; second tergite with a single row of sparse pits on dorsomedian side, rest of median portions smooth, scutellum as in figure 120..... **BREVICORNUTA** (Strand)

1. *Rhynchochalcis pruinosa* (Cameron)

(Figs. 115, 116)

Megacolus (!) *pruinosa* Cameron, 1906:93, Lectotype, F., PAKISTAN, Quetta, (BMNH no. 5-123) (examined).

Diagnostic features: *Female*: Black; eyes pale brownish yellow, fore and mid femora, tibiae and tarsi liver brown, with bases and apices of femora and tibiae rufous; hind leg completely rufous;

tegulae brown or rufous; all gastral sternites, sides of first and second tergites rufous; dorsal side of gaster blackish brown. Forewing hyaline with minute setae. Head width little more than 1.16x its length; relative measurements of POL : 21, OOL:6; scrobe reaches front ocellus; preorbital carinae slightly indicated; postorbital carinae absent; frons and gena densely pubescent; relative length of height of eye to frontogenal sulcus in profile 37:23. Clypeus semisquare; antenna with scape reaching front ocellus as in figure 116. Thorax with close pits on dorsum; interstices narrow, ecarinate, rugulose; each pit with a seta; anterior pronotal carinae present, vaguely joining with posterior border at middle, not forming tubercles; apex of scutellum bilobed; a median faint longitudinal depression present on scutellum and apex densely pubescent. Forewing with relative measurements of veins: submarginal : 125, marginal : 27, postmarginal : 30, stigmal : 15. Hind coxa without a dorsobasal tooth; hind femur as in figure 115. Propodeum with submedian carinae slightly irregular, accessorial and sublateral carinae indistinguishable; postspiracular teeth of sides well developed. Gaster with first tergite sparsely punctate; second tergite with a median smooth area, sides punctate.

Host : Unknown.

Distribution : Pakistan.

Materials examined : Lectotype only.

2. *Rhynchochalcis thresiae* sp. nov.

(Figs. 117, 118)

Female: Length: 3.6-4.2 mm. Black; eyes blackish brown, with black patches; fore and midlegs brownish black, with tarsi brown; hind coxae, femora and tibiae reddish, hind tarsi black; gastral sternites and sides of first two or three tergites brownish red. Forewing hyaline with brownish tinge, veins black, pubescence silvery. Head as in figure 117; postorbital carina faintly indicated;

genotemporal margin with a short furrow on dorsal side; gena and frons densely pubescent: relative measurement of POL :21, OOL :4. 5. Antenna with scape almost reaching front ocellus; relative length of measurement of segments: scape: 58, pedicel :10, ring segment: 3, fourth segment :17 fifth segment :15, sixth segment :14, seventh segment :12, eighth segment :14, ninth segment : 12, tenth segment :9, club :29. Relative measurements of width of segments: pedicel :10, ring segment :12, fourth segment :13, fifth segment :14 sixth segment :15, seventh segment :16, eighth segment :16 ninth segment :18 tenth segment : 18, club :17; club oblique with micropilosity on ventral side; thorax with close pits on pronotum, mesoscutum, scapulae, axillae and on scutellum, interstices narrow, rugulose, on pronotum on anterior part of mesoscutum, and on anterior part of scapulae; rest of portions smooth, not ecarinate; apex of scutellum distinctly bilobed and somewhat densely pubescent; pubescence below axillae on sides dense. Propodeum distinctly pitted; sublateral carinae distinct and well marked, accessorial carinae and submedian carinae indistinct, postspiracular teeth well developed; mesopleuron concave. Tegulae rugulose; metapleuron densely pubescent. Forewing with relative measurements of veins: postmarginal : 31, marginal : 30, submarginal : 110, stigmal : 16. Hind coxa with a slight tubercle at base on dorsal side; hind femur weakly bilobed, its length a trifle less than twice its width. Gaster as in figure 118, distinctly longer than thorax, (65:48), densely pubescent on sides of tergites second to sixth, first tergite smooth and shiny with a very few widely scattered dot like pits on dorsal side, posterior margin straight; second tergite smooth on dorsomedian part, third to fifth tergite with close punctures, interstices shagreened; sixth tergite distinctly pitted, interstices shagreened; epipygium median length subequal to 2x median length of sixth tergite when measured from dorsal side, subequal to 1.5x median length of exerted part of ovipositor sheath.

Male: Length: 3.2-3.7 mm. Similar to female except in having antenna stouter, (micropilar area indistinct). Gaster shorter, pits on gastral tergites more pronounced.

Holotype: F., INDIA, Kerala, Calicut University Campus, 12. ii. 1986. *Paratypes:* 1 F., 3 M., of same data of holotype excep

date of collection which, are: 15. iv. 1986, 8.viii. 1986, 19. ix. 1986. 1 F., INDIA, Kerala, Peechi, Mathew, 11. iv. 1983, ex *Pterom. plagiophleps* Hampson (Lep. Psychidae). 1 M., Kerala, Malampuzha, 18.i.1986, 1 M., Kerala, Sultan's Battery, 1986. Holotype and all paratypes except one otherwise mentioned, collected by Narendran & party. All types are in DZCU. This species is named after my doctoral student Thresiamma verghese for her considerable help in the preparation of this monograph.

3. *Rhynchochalcis lankana* sp. nov.

(Figs. 119, 412)

Female: Length: 4.49 mm. Black; fore and mid femora and tibiae liver brownish-black; hind femur red; hind coxa and hind tibia reddish black; wings hyaline with brownish tinge. Head width 1.1x its length, subequal to maximum width of thorax, including tegulae, preorbital carinae distinct, joining auricular carinae; postorbital carinae hardly visible; genotemporal furrow vaguely indicated on dorsal side; scrobe faintly striated, reaches front ocellus, area below antennal toruli and clypeus slightly raised; relative measurement of POL : 39, OOL : 9. Antenna with scape almost reaching front ocellus, club with distinct micropilosity on ventral side; relative measurements of length of antennal segments : scape: 51, pedicel : 15, ring segment : 5, fourth segment : 17, fifth segment : 13, sixth segment : 14, seventh segment : 14, eighth segment : 14, ninth segment : 11, tenth segment : 10; club : 28; relative width of segments; pedicel : 9, ring segment : 9, fourth segment 13, fifth segment : 14, sixth segment : 15.5, seventh segment : 15.5, eighth segment : 15.5, ninth segment : 15.5, tenth : 15.5 and club 15. Thorax with close pits on dorsum; interstices narrow and rugose on pronotum and on anterior part of mesoscutum; interstices somewhat carinate on posterior part of mesoscutum, wider than diameter of pits on middle part of scapulae; interstices narrow, smooth shiny and ecarinate on scutellum, apex of scutellum as in figure 119; scutellum somewhat flat; area below axillae densely pubescent. Propodeum with submedian and sublateral carinae distinct, postspi-

racular teeth distinct. Tegulae sparsely pitted and pubescent, mesopleura concave, metapleura densely pubescent. Hind coxa with dorsal tubercle hardly visible; hind femur length twice its width. Forewing with relative measurements of veins: postmarginal vein : 22, marginal : 21, submarginal : 81, stigmal : 8. Gaster distinctly longer than thorax (91:70) densely pubescent on sides; first tergite smooth and shiny with a few shallow dots on middle part, sides pitted, pubescent, posterior margin straight, second tergite densely pitted on posterior half, without median smooth portion inbetween, sixth tergite distinctly pitted, interstices shagreened; epipygium subequal to median length of sixth tergite, a little over 1.25x median length of exerted part of ovipositor sheath.

Male: Unknown.

Holotype: F., CEYLON (= Sri Lanka) Kandy, Karunaratne, 24. xi.1967, BSRI).

4. *Rhynchochalcis brevicornuta* (Strand

(Figs. 120, 413)

Antrocephalus brevicornutus Strand, 1911 : 8, Lectotype M., SRI LANKA, (ZMHU).

Boucek selected the lectotype in 1980 and I have examined this type. Several females of this species could also be examined. This species resembles closely the previous species *thresiae* in almost all features, except in having the following: (1). Hind tibia completely black, (2). relative measurements of POL : 37, OOL : 5, (3). apex of scutellum very weakly emarginate, almost entire (4). shape of gaster (Fig. 413) very different with median length of epipygium distinctly shorter than median length of sixth tergite 133:42), when measured from dorsal side, about twice median length of exerted part of ovipositor.

Host: Unknown.

Distribution : Sri Lanka, India.

Materials examined : Apart from the lectotype 2 F., INDIA, Andhra Pradesh, Guntoor, Narendran & Party, 29.vii 1985. 1F., India, Coimbatore, Narendran & Party, 27.ix.1987. 1 F., INDIA, West Bengal, Parganas, S.K. Gupta, 17.v.1981. 1 M., INDIA, West Bengal, Calcutta, Salt Lake Area, S.K. Gupta, v.1982. 1 M., INDIA, Kerala, Sultan's Battery, Narendran & Party, 1985. 1 M., INDIA, Andhra Pradesh, Tennali, Narendran & Party, 25.ix,1985. 1 M., INDIA, Pondicherry, Karikal, P.S. Nathan, x.1968.

7. Genus *TAINANIELLA* Masi

(Figs. 121, 414)

Tainaniella Masi, 1929 : 161, Type-species: *Tainaniella subulifera* Masi by original designation.

I have examined the primary types of *Tainaniella subulifera* Masi (1929) and *Halticella spinator* Walker (1862) and found them to be the same. The label under the type specimen *spinator* showing that it is "*Xyphorachidia spinator* (Walker)" by Boucek was seen. However I find that this is not *Xyphorachidia* because the genus *Xyphorachidia* (I examined the type of *Xyphorachidia*) differs from *Tainaniella* in having hind femur with three lobes on outer ventral margin, preorbital carinae projecting characteristically in profile and in having basal gasteral tergites with scattered microsculptures on dorsal side (Narendran et.al, 1989). The genus *Tainaniella* has hind femur bilobed or at the most unilobed and never trilobed; preorbital carinae not at all as pronounced and projecting as in *Xyphorachidia* and basal tergite smooth and shiny. The two genera resemble each other very closely having the scutellum produced posteriorly into a long and large spine as in the case of the genera *Aspirhina* Kirby and *Trichoxenia* Kirby. Biology: Unknown. Distribution: Oriental Region.

KEY TO ORIENTAL SPECIES OF *TAINANIELLA* MASI

1. Posterior projection of scutellum (Fig. 121) relatively very short; median length of scutellum from base to tip of

projection distinctly less than median length of first gastral tergite; gaster with second to fourth tergite without distinct large round pits on dorsal parts but with simple sparse pits and pubescence; posterior margin of first tergite concave at middle; interstices on middle of scutellum smooth and shiny; postorbital carina not uniting distinctly, behind hind ocelli to form a ridge.....MALABARICA sp. nov.

- Scutellar projection (Fig. 414) much more longer than in alternate; median length of scutellum from base to tip of scutellar projection distinctly longer than length of first tergite; gaster with distinct larger pits on dorsolateral parts of second to fifth tergite and on sixth tergite; posterior margin of first tergite not concave at middle; interstices on scutellum uniformly rugose, without a smooth and shiny area on median part; postorbital carinae distinctly uniting behind hind ocelli to form a ridge.....SPINATOR (Walker)

1. *Tainaniella malabarica* sp. nov.

(Fig. 121)

Female : Length: 5.78 mm. Black; eyes dark, yellowish grey fore and mid tarsi, apices of fore and mid tibiae brown; wings hyaline, veins brownish black; head width 1.2x its length; subequal to maximum width of thorax; preorbital carinae distinct, united behind front ocellus; postorbital carinae running upwards towards vertex and joining the posterior margin of hind ocelli, not distinctly joining each other to form a ridge behind hind ocelli; frontogenal sulcus distinct, somewhat carinate; genotemporal furrow absent; scrobe striated, reaching front ocellus; relative measurements of : POL: 15, OOL : 3; antenna with scape almost reaching front ocellus, relative measurements of lengths of antennal segments: scape : 54, pedicel : 10, ring segment : 5, fourth segment : 10, fifth segment : 11, sixth segment : 10, seventh segment : 8, eighth segment : 8, ninth segment : 7, tenth segment : 7, club : 19; relative width of segments: pedicel : 8, ring segment : 8, fourth segment : 9, fifth segment : 10, sixth segment : 10, seventh segment : 10.5, eighth segment : 11, ninth

segment : 11, tenth segment: 12, club : 11. Thorax closely pitted, interstices narrower than half diameter of pits in most places, ecarinate, distinctly rugulose, (except on median part of scutellum where interstices smooth and shiny); apex of scutellum as in figure 121. Propodeum with distinct large areolae, lateral costae, sublateral and submedian carinae distinct, accessorial carinae not clearly marked, postspiracular teeth present. Forewing with postmarginal : 29, marginal : 18, submarginal: 112, stigmal : 7; hind femora length 1.62x its width, distinctly bilobed, hind tibia with normal ventral carina slightly deviating towards the dorsal side at the apical region. Gaster distinctly longer than thorax and as in figure 121 (60:52).

Male : Unknown.

Holotype : F., INDIA, Calicut University Campus, Narendran 11.x.1983, (DZCU).

2. *Tainaniella spinator* (Walker) comb. nov.

(Fig. 414)

Halticella spinator Walker, 1862 : 364, Lectotype F. SINGAPORE. (HDEO) (examined).

Tainaniella subulifera Masi, 1929 : 161—163. Lectotype F. PHILIPPINES, Mindanao, (USNM) (examined) **Syn. nov.**

I examined the lectotypes of *spinator* and *subulifera* and found them to be the same. It differs from *malabarica* in the characters mentioned in the key above.

Host : Unknown.

Distribution : Singapore, Taiwan, India, Philippines, Sarawak.

Materials examined : Apart from the primary types mentioned above 1 F., INDIA, Kerala, Calicut University Campus, Narendran & Party, 17. VII.1986. 1 F., BORNEO, Sarawak, G.L. Gressitt. 1 M., PHILIPPINES, Los Banos, C.F. Baker, 1927.

8. Genus *OXYCORYPHE* Kriechbaumer

(Figs. 122—135, 415—417)

Oxycoryphe Kriechbaumer, 1894 : 67, Type-Species *Oxycoryphe subaenea* Kriechbaumer ; by monotypy.

The known synonyms : *Paraspirhina* Cameron (1911) & *Hoozania* Masi (1932). This genus comes near *Antrocephalus* but can be separated from it by the characters given in the key to genera above (see also Boucek 1988), especially by the pronotum and by the presence of strong additional carina on hind tibia. The typical character of apex of scutellum (produced posteriorly as a unilobe) is not found in some species like *komui*, *glabrum* etc. Similarly the pronotal median tubercle in some species becomes extremely faint and in others only a faint triangular area is indicated. In some species especially in the typical forms, the thoracic notum including propodeum become quite flat whereas in some others like *thresiae* it is not so. Epipygium in the typical forms reaches near subapical part of ovipositor sheath whereas in *nitida* it is not at all reaching apex. Biology : Parasitic on Lepidoptera. Distribution: Africa, Asia, New Guinea.

KEY TO ORIENTAL SPECIES OF *OXYCORYPHE*

KRIECHBAUMER (FEMALES)

1. Apex of scutellum with inwardly curved teeth (Fig. 135) Pronotum with distinct median tubercle.....*MACULIPENNIS* (Masi)
- Characters not as above; characters partly or completely different2
2. Visible part of ovipositor sheaths from dorsal side (Fig. 125) much shorter than median length of epipygium.....3

- Visible part of ovipositor sheaths (from dorsal side) (Fig.134)
much longer than median length of epipygium..... 9
- 3. Epipygium with two teeth, one each projecting on either side
(Fig. 123); propodeum with distinct median carina from three-
fourth of median areola from posterior margin, apex of scutellum
produced posteriorly (Fig. 122).....PADMASENANI sp. nov.
- Not as above; characters partly or completely different.....4
- 4. Epipygium flat (Fig. 124), oval shaped with a well raised median
carina, its median length 1.5x median length of sixth tergite,
2.52x median length of exerted part of ovipositor sheath from
dorsal side.....SUMODANI sp. nov.
- Characters not as above, partly or completely different.....5
- 5. Median length of epipygium distinctly longer than twice median
length of sixth tergite (Fig. 125).....6
- Median length of epipygium distinctly shorter than twice median
length of sixth tergite (Fig. 130)..... 8
- 6. Apex of scutellum as in figure (Fig.126); legs brownish yellow;
sixth tergite rugulose: pronotum with median tooth.....
.....TENAX sp. nov.
- Characters not as above, partly or completely different.....7
- 7. Apex of scutellum (Fig. 127) long and incised: postmarginal vein
distinctly longer than marginal; POL 3x OOL: propodeal teeth
indistinct.....
.....SCUTELLATUS sp. nov.
- Apex of scutellum (Fig. 128) not as above: postmarginal equal
to marginal: POL much more than 3 x OOL; propodeal teeth
distinct.....
.....THRESIAE sp. nov.

8. Gaster (Fig. 130) length excluding epipygium and ovipositor sheath) a little longer than thorax, pits on thoracic notum and head widely separated with interstices smooth and shiny; propodeum without deep concavities at distal part lateral to submedian carinae; basal carinae of gaster converging posteriorly. Gasteral tergite almost smooth with very few scattered pits; apex of scutellum as in figure 129 **GLABRUM** sp. nov.
- Gaster shorter, length (excluding epipygium and ovipositor sheath) distinctly shorter than thorax; pits on thoracic notum closer than in the alternate; propodeum with deep (Fig. 132) concavities on either side at distal part, lateral to submedian carinae; basal gasteral carinae not converging posteriorly; gasteral tergites not as smooth as in the alternate. Sixth tergite with shallow pits and microsculptures; apex of scutellum as in figure 131 **KOMUI** sp. nov.
9. Apex of scutellum produced posteriorly into a square lobe (Fig. 133); pronotum with a distinct median tubercle; postmarginal vein short, subequal to stigmal; propodeum with post-spiracular lateral teeth not prominent; thorax not convex (Fig. 416); first tergite of gaster with a pair of short basal carinae..... **NITIDA** (Cameron)
- Apex of scutellum deeply emarginate (Fig. 134); pronotum with median tubercle hardly visible, a triangular area indicated; postmarginal vein more than 2x stigmal; propodeum with well developed postspiracular (Fig. 417) lateral teeth; thorax convex; first pair of gasteral tergite without basal carinae..... **EDENTATA** sp. nov.

1. **Oxycoryphe padmasenani** sp. nov.

(Figs. 122, 123)

Female : Length; 3.92 mm. Black; scape, pedicel, first funicular segment, club, bases and apices of femora; bases and apices of fore

and mid tibiae, all tarsi, apices of hind tibiae, and tegulae reddish brown; antennal segments of four to ten, middle regions of fore and mid femora, hind coxa and femora liver black. Wings hyaline with yellow pubescence on veins, eyes yellowish brown. Head width 1.1x its length, subequal to maximum width of thorax; relative measurement of POL : 14, OOL : 3; scrobe reaching front ocellus, preorbital carinae present, postorbital carinae absent; genotemporal furrow present; frontogenal sulcus carinate on ventral half; antennae with scape not reaching front ocellus; relative measurements of segments : scape : 53, pedicel : 8, ring segment : 5, fourth : 13, fifth segment : 11, sixth segment : 12, seventh segment : 11.5, eighth segment : 10, ninth segment : 10.5, tenth segment : 10, club : 14. Relative measurement of width of segments : pedicel : 7, ring segment : 7, fourth segment : 10, fifth segment : 11, seventh segment : 11 eighth segment : 11, ninth segment : 12, tenth segment : 12, club : 11.5. Thorax with distinct median pronotal tubercle; pits widely separated on median regions of mesoscutum, scutellum and on scapulae, interstices smooth and shiny, apex of scutellum as in figure 122. Propodeum flat, with median, submedian and sublateral carinae distinct, lateral teeth indistinct. Forewing with postmarginal extremely short, shorter than marginal. Hind femur with a distinct inner basal tooth, hind femur length a trifle over twice its width, outer ventral margin bilobed, with a comb of teeth; hind tibia with an extra external carina; gaster with pre-epipygeal part distinctly longer than thorax (32 : 29); first tergite with two basal carinae, smooth and shiny, second to fifth tergite smooth and shiny, at the most with a single row of minute pits on sides; epipygium peculiar as in figure 123, with two teeth like projections (one on either side) anterior to each circus; surface rugosopunctate and carinate at middle.

Male : Unknown.

Holotype : F, PHILIPPINES, N.w. Panang, C.F. Baker, 1927 (USNM)

2. *Oxycoryphe sumodani* sp. nov.

(Figs. 124, 415)

Female : Length : 6.56 mm. Black; antennal funicle brownish red; scape, fore and mid tarsi brownish yellow; middle regions of fore and mid femora, hind femur, hind tibia (except apex) and gaster liver brown; hind tarsi pale brown. Eyes blackish grey with pale yellow; wings hyaline, with yellowish pubescence and veins; head width 1.1x its length; wider than maximum width of thorax; relative measurements of POL : 16, OOL : 2; preorbital carinae present; postorbital carinae absent; frontogenal sulcus carinate; ending in a pit just below eyes; genotemporal furrow deep; scrobe shagreened; reaching front ocellus; head distinctly pitted with interstices smooth and shiny on frons and gena. Antenna with scape reaching front ocellus, relative measurements of length of segments scape : 50 pedicel : 5, ring segment : 4, segments four to ten almost equal in length; club : 18, relative width of segments, pedicel : 6, ring segment : 8, fourth segment : 9, fifth, sixth and seventh 10 each, eighth, ninth and tenth 12 each; club : 11. Thorax with a distinct median tubercle on pronotum; notum with distinct round pits, interstices smooth and shiny; more than four to five times wider than diameter of pits on median parts of mesoscutum and scutellum; apex of scutellum prolonged posteriorly to form a unilobe, bending slightly towards ventral side at its apex. Propodeum flat, its submedian and sublateral carinae distinct, lateral teeth absent. Forewing with postmarginal hardly distinct, hind femora length (Fig. 415) 1.7x its width, with an inner basal tooth, outer ventral margin weakly bilobed. Gaster with 2 basal carinae on first tergite, length of each carina subequal to width between them; first tergite smooth and shiny; second tergite smooth with sides sparsely pubescent; third to fifth tergite with a single row of pits on dorsal side with region anterior to them (pits) finely rugulose; sixth tergite with sparse shallow pits with interstices finely rugulose; epipygium and ovipositor sheath as in figure 124.

Male : Unknown.

Holotype : F, SUMATRA, Panang, Coll. E. Jacobson, ix.1913 (USNM).

3. *Oxycoryphe tenax* sp. nov.

(Figs. 125, 126)

Female : Length: 4.57– 5.78 mm. Black; scape, pedicel, ring segment, first funicular segment, all legs, except fore coxa, brownish yellow; tegulae reddish on sides, (often extending to dorsal side in some paratypes); in one specimen from Philippines thoracic notum slightly rufous; wings hyaline, with brownish tinge; head width a trifle over its length, distinctly wider than thorax; preorbital carinae well distinct; postorbital carinae present, running upwards, genotemporal furrow present, relative measurement of POL : 13, OOL : 3, scrobe striate, reaching front ocellus, antenna as in figure 125, scape not quite reaching front ocellus; thorax with a strong tooth on median part of pronotum, pits on notum closed, interstices narrow, and carinate on pronotum; interstices smooth, shiny and ecarinate on scapulae and axillae; interstices smooth on scutellum; scutellum as in figure 126. Propodeum with submedian and sublateral carinae distinct; accessorial carinae indistinct, postspiracular teeth present; Forewing with venation as in figure 125. Hind coxa with a weak tooth at dorsobasal side; hind femora as in figure 125. Length of pre-epipygeal part of gaster subequal to length of thorax; first tergite with a pair of basal carinae, each carina a trifle longer than the space between them; posterior margins of first to fifth tergites emarginate. dorsal surface of first to fifth tergites smooth and shiny; sixth tergite rugulose and shiny, with few sparse and shallow pits, epipygium distinctly carinate at middle, fully pubescent.

Male : Length: 4.73 mm. Similar to female except in having
1), basal carinae of gaster much longer than space between them,
2), posterior margin of tergites first to fifth not emarginate,
3), hind femora a little more swollen, antennae stouter.

Holotype : F., MALAYSIA, Negril S, Pasoh Forest, Resv, Coll, P. & M. Baker, 11.v.1980, (AEI). *Paratypes* : 4 F. same data as for holotype, except for collection dates; 2 F, MALAYSIA, Sabah, Coll, C. V. Achterberg, 24. ii. to 18.iii. 1987, 14. i 1987, (RNHL.)

4. *Oxycoryphe scutellatus* sp. nov.

(Figs. 127, 388)

Female: Length: 6.74-7.88 mm. Black; eyes yellow; tarsi yellowish brown (the black colour often tends to become liver brown in some paratypes); wings hyaline but infumated; head width 1.13x its length, subequal to maximum width of thorax; length of eye a little over twice length of malar space; scrobe reaching front ocellus, but separated by a transverse ridge; preorbital carinae well developed; frontogenal sulcus carinate, postorbital carinae running upwards to vertex; genotemporal furrow present; auricular carinae reach frontogenal sulcus; relative measurement of POL:15, OOL:5; antenna with scape not reaching front ocellus, segments as in figure 388. Thorax provided with anteriorly wavy carinae forming a triangle in middle; pits on notum close, interstices narrow and rugose; apex of scutellum as in figure 127; propodeum with distinct submedian and sublateral carinae; lateral costae distinct; lateral teeth indistinct; forewing as in figure 388; hind coxa with a small basal tooth on dorsal side; hind femora without an inner basal tooth. Gaster as in figure 388; first tergite with basal carinae shorter than space between them, smooth and shiny, posterior margin of first to fifth tergites emarginate; tergites second to fifth densely microsculptured, densely pubescent on sides; sixth tergite with distinct pits; interstices microsculptured.,

Male: Length: 4.79 mm. Resembles the female except in having basal carinae of gaster longer than space between them, first gastral tergite microsculptured in one half; posterior margins of tergites not emarginate, tergites second to fifth with pits and microsculptures and antenna stouter.

Holotype: F., MALAYSIA, S.W. Sabah, Coll. C.V. Achterberg, 1-13.iv.1987, (RNHL). *Paratypes*: 1 F. SUMATRA, Panang (BUO Pas, Bov.) E. Jacobson, 1944 (RNHL). 1 M., PHILIPPINES, C.F. Baker, 1927, (USNM).

5. *Oxycoryphe thresiae* sp. nov.

(Figs. 128, 389)

Female: Length: 5.9-6.55 mm. Black; apices of fore and mid femora, bases and apices of fore and mid tibiae, all tarsi, testaceous. Head width 1.1x its length, subequal to width of thorax; preorbital carinae well developed; postorbital carinae and genotemporal furrow present; scrobe striate, reaching front ocellus. Antenna with scape not at all reaching front ocellus; antennal segment as in figure 389. Thorax with pronotal median tooth indicated as a raised carinae; pits on notum close, and interstices narrow, ecarinate and striate; apex of scutellum as in figure 128; propodeum with distinct submedian carinae; post-spiracular teeth present; forewing as in figure 389. Hind coxa with a basodorsal tooth; hind femora without an inner basal tooth. Gaster as in figure 389, first tergite without basal carinae, with a semirectangular basal pit, smooth, and shiny, posterior margin almost straight; second tergite smooth and shiny on dorsal side; sides microsculptured and pubescent, posterior margin broadly emarginate; third to fifth tergite fully microsculptured, broadly emarginate posteriorly.

Male; Unknown.

Holotype: F., INDIA, Calicut University Campus, Narendran & Party, 9.vii.1986, (DZCU). *Paratypes*: 1 F, Bangalore, Narendran 10.x.1985, (DZCU).

6. *Oxycoryphe glabrum* sp. nov.

(Figs. 129, 130)

Female: Length: 5.28-6.58 mm. Black; antennae, interantennal projection, tegulae, legs and ventral ends of gastral tergites rufous. Wings hyaline with yellowish tinge; eyes blackish grey. Head width 1.1x its length, a trifle wider than maximum width of thorax, smooth and polished, with scattered deep pits; preorbital carinae slightly indicated, parascrobal space somewhat convex; scrobe reaching front ocellus; relative measurements of POL : 14, OOL : 3; genotemporal

furrow deep; postorbital carinae absent; antenna with scape not reaching front ocellus; relative measurement of length of segments: scape : 60, pedicel : 10, ring segment : 6, fourth segment : 11, fifth segment : 12, sixth segment : 12.5, seventh segment : 12, eighth segment : 10, ninth segment : 11, tenth segment 10, club: 27; relative measurement of width of segments : pedicel : 8, ring segment : 8.5, fourth segment 10, fifth segment : 11, sixth segment : 12, seventh segment : 12.5, eighth segment : 13.5, ninth segment : 13.5, tenth segment : 13.5, club : 14. Thorax with pronotal median triangular projection moderately distinct; thoracic notum with distinct small umbilicate pits, interstices of pits more than twice diameter of pits in most areas; smooth and shiny; apex of scutellum emarginate and bilobed (Fig. 129); propodeum with submedian carinae distinct, lateral teeth absent. Forewing with relative measurements of veins: submarginal : 120, marginal : 13, postmarginal : 7 and stigmal : 7; hind femur length 2.02 x its width, bilobed, without an inner basal tooth, basal carinae of gaster as in figure 130, gastral tergites smooth and shiny, with very few sparse small pits here and there; gaster excluding epipygium and ovipositor sheath a little longer than thorax.

Male: Length: 5.28 mm. Similar to female except following features: more blackish; basal carina of gaster more pronounced, first gastral tergites longest with convex posterior margin.

Holotype: F., PHILIPPINES, Negriz, Curenos Mts. Coll. C.F. Baker, 1927 (USNM). *Paratypes*: 1 M., SINGAPORE, C.F. Baker, 1927 (USNM).

7. *Oxycoryphe komui* sp. nov.

(Figs. 131, 132, 390)

Female : Length: 4.85 mm. Black; scape, pedicel, ring segment, first and second funicular segments, club, legs, basal sides of gaster and basal sides of ovipositor sheath rufous; basal rufous part of gaster extending slightly to dorsal region on either side; wings hyaline, with brown infuscation near marginal vein. Head

width a little more than its length, subequal to maximum width of thorax; scrobe reaching front ocellus, preorbital carina well developed, auricular carinae join frontogenal sulcus; postorbital carinae as in figure 390; genotemporal furrow deep; length of eye 1.2x length of malar space; relative measurement of POL:30, OOL: 6. Antenna with scape not reaching base of ocellus, segments as in figure 390. Thorax with pronotal median projection well distinct (not forming tooth); pits on thoracic notum close, interstices narrow, rugose on pronotum, anterior part of mesoscutum, scapulae, axillae, and on sides of scutellum; interstices half as broad as diameter of a pit in median area of scutellum, smooth and shiny; apex of scutellum as in figure 131. Propodeum as in figure 132. Forewing as in figure 390. Hind femur and gaster as in figure 390; first tergite smooth and shiny on dorsal side, basal carinae subequal to space between them; posterior margin of first tergite not emarginate; sixth tergite with scattered shallow pits, interstices and inside of pits sculptured; epipygium carinate at middle, its median length when measured dorsally distinctly longer than median length of sixth tergite.

Male: Unknown.

Holotype: F., INDIA, Feroke, C.U. Campus, Narendran & Party, 12.vi.1986, (DZCU).

8. *Oxycoryphe nitida*. (Cameron)

(Figs. 133, 416)

Paraspirhina nitida Cameron, 1911 : 15, Lectotype F, BORNEO, (BMNH), (examined).

Female: Length 7-7.53 mm. Black; antennae, forelegs and mid legs yellowish, with brownish tinge on median parts and reddish brown on funicle, coxae and tegulae; hind femur and hind tibia liver brown; with their bases and apices paler, hind coxa and ventral side of gaster black with liver colour mixed, wings hyaline with yellow tinge; veins deeper, yellowish. Head width a little more than its median length, broader than maximum width of thorax;

scrobe reaching front ocellus, preorbital carinae present, reaching frontogenal sulcus; postorbital carinae absent; genotemporal furrow present; relative measurement of POL : 21, OOL : 6; antenna with scape not reaching front ocellus, length of scape subequal to combined length of segments four to eight, club length more than twice length of preceeding segment; thorax with median pronotal tubercle distinct; pits on most parts of mesoscutum and scutellum widely separated (in some specimens pits on scutellum closer); apex of scutellum as in figure 133. Propodeum with distinct submedian, and sublateral carinae, median carinae also distinct in some specimens; lateral teeth absent; hind coxa without a distinct basodorsal tooth; hind femur with a distinct inner basal tooth, outer ventral margin weakly bilobed, with a row of comb like small teeth; forewing with very short stigmal; postmarginal indistinct. Gaster length excluding epipygium and ovipositor sheath subequal to length of thorax; first tergite with a pair of short basal carinae, each carina shorter than width between them; posterior margin of first tergite straight; tergites two to five with a single row of sparse minute pits and faint microsculptures on dorsal side; sixth tergite with sparse shallow pits; interstices shagreened; epipygium carinate at middle, median length about half median length of sixth tergite; ovipositor sheath as long as three preceeding segments combined.

Male: Unknown.

Host: Unknown.

Distribution: Borneo (Kalimantan), Malaysia (New Record).

Materials examined: Apart from the lectotype : 1 F. MALAYSIA, Negris, P.M. Baker, 10.xii. 1979.

9. *Oxycoryphe edentata* sp.nov.

(Figs. 134, 417)

Female: Length: 8.24 mm. including ovipositor sheath; black; all tarsi brown; eyes and ocelli pale yellow; wings hyaline with veins brown; head width 1.15 x its length, subequal to maximum width

of thorax; relative measurements of POL : 22, OOL : 5; scrobe shagreened, reaching front ocellus; preorbital carina distinct, reaching frontogenal sulcus; postorbital carina present; frontogenal sulcus carinate; genotemporal furrow absent. Antenna as in figure 134. Thorax with median tubercles hardly visible, a vague and faint triangular area indicated; pits on notum close and interstices narrow, carinate, rugulose in most parts; apex of scutellum with two distinct teeth; propodeum not flat (Fig. 417) with submedian and sublateral carinae distinct; postspiracular teeth well developed; hind femur without an inner basal tooth; hind coxa with a distinct basodorsal tooth; forewing as in figure 134. Gaster without basal carinae on first tergite but with a subrectangular pit; first tergite smooth, shiny, posterior margin emarginate; second tergite smooth on median dorsal side; rugulose on sides, posterior margins emarginate; third to fifth tergites rugulose, their posterior margins emarginate; sixth tergite with very shallow pits; interstices and inside of pits rugulose; epipygium relatively short, its median length about half median length of sixth tergite when measured from dorsal side; ovipositor sheath about 5x median length of epipygium.

Male: Unknown.

Holotype: F. TAIWAN, Wushe, H. Townes, 19.iv.1983 (AEI)

10. *Oxycoryphe maculipennis* (Masi)

(Fig. 135)

Hoozania maculipennis Masi 1926:40, F. TAIWAN (DEI).

Masi has given a good description of this species. This species has a distinctive apex of scutellum as in figure 135. Length of hind femur 2.2x its width, outer ventral margin deeply concave at middle.

Host: Unknown.

Distribution: Taiwan.

9. Genus **TANYCORYPHUS** Cameron

(Figs. 136-141, 418, 419)

Tancoryphus Cameron 1905d: 313, Type-species: *Tancoryphus sulcifrons* Cameron, by Monotypy.

The known synonyms are: *Sabatius* Masi (1929) and *Malambrunia* Masi (1929). This genus comes very close to the extralimital genera *Chirocera* Latreille (= *Hippota* Walker) and *Tanyotorthus* Steffan in general but differs from them in having postmarginal vein of forewings relatively shorter (in *Chirocera* and *Tanyotorthus* about four to five times longer) and in having pre and postorbital carinae present. The most characteristic feature of this genus is that the hind tibia is with a characteristic outer spur and outer carina as in figure 138. The antenna of male is pectinate in this genus as in the case of *Chirocera*. Biology: Unknown. Distribution: Africa and South Asia.

KEY TO ORIENTAL SPECIES OF *TANYCORYPHUS* CAMERON

1. Females 2
 - Males 5
2. First gastral tergite with microsculptures or shagreening on disc 3
 - First gastral tergite smooth on disc 4
3. Sixth gastral tergite with distinct pits, interstices smooth; peritrim of stigmata (Fig. 136) of sixth tergite prolonged to exterior side by an appendage in the shape of a bowl of a spoon; median length of epipygium 1.5x longer than distance separating pygostyles **FORTICAUDIS** (Cam.)
 - Sixth tergite rugose; pits faintly indicated; peritrim of spiracle not as above **TOWNESI** sp. nov.
4. Fore femora (Fig. 139) maximum width half its maximum length; pronotal carinae weak; basal half of gaster red **SHONUS** sp. nov.

- Fore femora (Fig. 141) width distinctly less than its maximum length; pronotal carinae prominent; basal half of gaster black....
.....**MERISICORNIS** (Masi)
- 5. First gastral tergite with several carinae at base.....
.....**ATER** (Masi)
- First gastral tergite without carinae at base, a pit present.....
.....**CILICORNIS** (Cam.)

1. *Tanycoryphus forticaudis* (Cameron)

(Fig. 136)

Neochalcis forticaudis Cameron 1906: 96, Lectotype F.(here designated)
PAKISTAN, Quetta (BMNH no. Type. 5290b) (examined).

The only known synonym of this species is *Tanycoryphus micans* Steffan (1957). Diagnostic features : *Female* : Black; scape, pedicel, ring segment, first and second funicular segments brownish; fore and mid legs except tarsi liver brownish; hind legs rufous; all tarsi rufous; gaster black with first tergite and sternite rufous; tegula liver brownish.

A good description of the species is provided by Steffan (1957)

Host : Unknown.

Distribution : Pakistan

Material examined : 2 syntypes of *forticaudis* (out of 3 syntypes of Cameron, one belongs to *Psilochalcis* Kieffer). 1 paratype female of *micans*.

2. *Tanycoryphus townesi* sp. nov.

(Figs. 137, 138)

Female : Length 3.75mm. Black; eyes and ocelli yellow; legs and gaster mostly liver brown with tarsi pale yellowish brown; forewing

hyaline with veins pale brown, pubescence sparse and white. Head width about 1.4x its length, a little wider than maximum width of thorax; preorbital carinae well developed, running behind front ocellus on vertex, ventrally below eyes joins with postorbital carinae which run upwards to vertex; frontogenal sulcus and genotemporal furrow indistinct; scrobe not quite reaching front ocellus; relative measurements of POL : 44, OOL : 9. Antennae with scape not reaching front ocellus; relative measurements of lengths of segments: scape : 39, pedicel : 8, ring segment : 6, fourth segment : 11, fifth segment : 11.5, sixth segment : 9, seventh segment : 10.5, eighth segment : 9, ninth segment : 9; tenth segment : 8, club : 18; relative measurement of width of segments: pedicel : 4, ring segment : 4.5, fourth segment : 5, fifth segment : 7, sixth to tenth segments 10 each, club characteristically conical at apex. Thorax with anterior pronotal carinae distinct, forming two tubercles in middle; pits on notum close, interstices carinate; rugose, somewhat raised in median part of mesoscutum; apex of scutellum almost entire (or very weakly emarginate); propodeum with well developed areolae, sub-median carinae distinct; stigmatic areola followed by several areolae, without forming definite rows; lateral teeth absent. Forewing with relative measurements of veins: submarginal : 109, marginal : 17, postmarginal : 9, stigmal : 7. Fore legs as in figure 137. Hind coxa without a dorsobasal tooth; hind femora without an inner basal tooth, outer ventral margin with a proximal distinct large lobe, followed by a row of comb like teeth as in figure 138; hind tibia as in figure 138. Gaster a little longer than thorax; first tergite without basal carinae, disc faintly shagreened, posterior margin not emarginate, convex, a little less than half length of gaster; second to fifth tergites smooth with microsculptures on posterior half; sixth tergite rugose, pits faintly indicated; epipygium carinate at middle, about half median length of sixth tergite.

Male : Unknown.

Holotype : F., MALAYSIA, Negris, Pasoh Forest Resv. Coll P.M.Baker, 10.iv. 1980, (AEI).

3. *Tanycoryphus shonus* sp. nov.

(Figs. 139, 418, 419)

Female : Length 6.25—6.53 mm. Black; eyes and ocelli brownish yellow; gaster red with apical one-third blackish; wings hyaline with a small brownish patch below parastigmal area, veins blackish brown. Head width 1.16x its length, distinctly wider than thorax; preorbital carinae well developed, joining postorbital carinae below eyes; scrobe striated, reaching front ocellus; frontogenal sulcus indistinct; relative measurement of POL : 25, OOL : 11. Antenna (Fig. 418) with scape reaching front ocellus; relative measurements of length of segments: scape : 50, pedicel : 8, ring segment : 5, fourth segment : 19, fifth segment : 15, sixth segment : 13, seventh segment : 13, eighth segment : 12, ninth segment : 12.5, tenth segment : 11, club : 16. Relative measurements of width of segments : pedicel : 6, ring segment : 7, fourth segment : 10, fifth segment : 11, sixth segment : 11.5, seventh segment : 14, eighth segment : 13, ninth segment : 12, tenth : 10, club : 9. Thorax with anterior pronotal carinae present, forming weak, tubercles in middle, pits on thorax close, interstices narrow, rugose: often elevated to form transverse ridges; mesoscutum with minute pits (pits coalesce each other) on anterior dorsal margin; apex of scutellum (Fig. 419) weakly emarginate, weakly bilobed; propodeum with distinct areolae, submedian carinae distinct, lateral teeth indistinct, stigmatic areolae followed by two rows of glabrous areolae; fore legs as in figure 139. Hind coxa without a dorsal tooth or carina; hind femur length 1.6x its width, outer ventral margin with a large prominent dent in median region followed by a comb of teeth, without an inner basal tooth; hind tibia with an extra external carina ending in a characteristic tubercle at apex. Forewing with relative measurement of veins submarginal : 160, marginal : 26, postmarginal : 15, stigmal : 8. Gaster distinctly longer than thorax without basodorsal carinae; first, second and third tergites smooth and shiny, their posterior margins not emarginate; fourth and fifth tergites faintly shagreened with a single row of shallow pits on posterior margin of fifth tergite; sixth tergite closely pitted, pits shallow, interstices and inside of pits rugose; epipygium carinate at middle, its median length 8x

median length of sixth tergite, twice length of ovipositor sheath when measured from dorsal side.

Male : Unknown.

Holotype : F. MALAYSIA, Negril S., Pasoh For. Res. Coll.P. & M.Baker, 30.iii. 1978 (AEI). *Paratype* F., same data as holotype except date : 24.x. 1978.

4. *Tanycoryphus merisicornis* (Masi)

(Figs. 140, 141)

Malambrunia merisicornis Masi 1929: 170, Lectotype F., BORNEO, Sandakan (MHNG).

This species is well described and illustrated by Masi (1929) and Steffan redescribed this species with suitable figures (1957). The female is black with scape, pedicel, wing veins, fore and mid femora, fore and mid tibiae blackish brown; anterior tarsi rufous; hind leg testaceo-rubricant.

Host : Unknown.

Distribution : Borneo (Kalimantan) and Philippines.

Materials examined : 1F., PHILIPPINES, Samar, C.F. Baker, 1927

5. *Tanycoryphus ater* (Masi)

Sabatius ater Masi 1929 : 165, Lectotype M. BORNEO (USNM) (examined)

This species is based on a male specimen and as such it is difficult to determine the identity of the species since the female is unknown. It closely resembles *Tanycoryphus cilicornis* (Cameron) but can be separated from it by the characters mentioned in the key above. Apart from this the antennal segments and propodeal sculpture also differ in the two species.

Host : Unknown.

Distribution : Borneo.

Material examined : Lectotype male.

6. *Tanycoryphus cilicornis* (Cameron)

Hippota cilicornis Cameron 1911: 14, Lectotype M. BORNEO, (BMNH-no. 5-290) (examined).

This species may be a male of *merisicornis* (Masi) but to be sure more specimens have to be studied. The type has one antenna (except scape) missing. The species has been redescribed by Steffan (1957). The type has punctures on thoracic notum deep and close, pronotum with distinct raised anterior carinae and prominent tubercles; apex of scutellum emarginate.

Host : Unknown

Distribution : Borneo (Sarawak)

Material examined : Lectotype male.

10. Genus *THRESIAELLA* gen. nov.

(Figs. 142,143,420—422)

Type-species : *Thresiaella caudata* sp. nov.

Head broader than thorax: temples developed; scrobe deep, not quite reaching front ocellus; preorbital carinae well developed, raised, running behind front ocellus; vertex raised, pronotum with two tubercles in middle separated by a deep fovea, anterior carinae faintly developed, not distinctly touching median tubercles; posterior margin of pronotum deeply emarginate; mesoscutum and scutellum convex; propodeum narrow towards distal end, horizontal to scutellum. Forewing with a distinct break between marginal and submarginal

(Fig.142); postmarginal extremely small. Gaster sessile with ovipositor sheath peculiarly curved up (Fig.142).

This genus comes near *Oxycoryphe* in general, but differs from it in having pronotum bituberculate; structure of cauda different; structure of frons and thorax different.

Etymology: The new genus is named after my student Miss Thresiamma for her considerable support in my research.

KEY TO ORIENTAL SPECIES OF *THRESIAELLA* gen. nov.

1. Gaster (Fig.421) with three distinct carinae on basodorsal side; median propodeal carina absent; apex of scutellum rounded....
.....**CAUDATA** sp. nov.
- Gaster with two distinct carinae at base on dorsal side; propodeum with a median carina; apex of scutellum slightly emarginate.....**BICARINATA** sp. nov.

1. *Thresiaella caudata* sp. nov.

(Figs. 142,420,421)

Female: Length 4.34 mm. Black; antennae, fore and mid legs reddish; apices of hind coxae, bases and apices of hind femora, hind tibiae and tarsus reddish brown; tegulae reddish brown; wings hyaline with brownish tinge; veins pale yellowish. Head (Fig.420) width 1.08x its length, distinctly wider than thorax; preorbital carinae joining frontogenal sulcus ventrally, uniting with each other behind front ocellus dorsally; postorbital carinae running upwards towards vertex; frontogenal sulcus carinate; genotemporal furrow shallow ventrally, deep dorsally; scrobe striated, deep, narrow, not quite reaching front ocellus; relative measurement of POL:30, OOL:5. Antenna (Fig.142) with scape not reaching front ocellus. Thorax with two weak median tubercles on pronotum, posterior margin of pronotum emarginate; pits on pronotum and anterior part of

mesoscutum close; interstices narrow and rugose; interstices on median part of mesoscutum, scapulae and on median part of scutellum smooth, shiny, wider than half diameter of pit in most areas of middle region; apex of scutellum rounded; propodeum flat with submedian and sublateral carinae distinct, accessorial carinae partly distinct anteriorly, lateral teeth indistinct. Forewing as in figure 142. Hind coxa with a dorsobasal carina: hind femora with an inner basal tooth, outer ventral margin with a row of comb like teeth, starting from middle region: hind tibia with an extra carina, somewhat swollen at apex. Gaster (Fig. 421) length subequal to length of thorax; first tergite with three distinct basal carinae, length of each carina more than the distance between it and nearest carina; length of first tergite exceeding half of gaster dorsally, smooth and shiny, its posterior margins not emarginate; second to fifth tergites smooth and shiny with very few sparse and small pits on dorsal side, their posterior margins not emarginate; sixth tergite with small pits and sparse pubescence, interstices faintly shagreened. Epipygium short, its median length less than half median length of sixth tergite dorsally: ovipositor sheath peculiarly developed, directed upwards as in figure 142.

Holotype :F., PHILIPPINES, Los Banos, Coll.Townes family
17.x.1953 (AEI).

2. *Thresiaella bicarinata* sp. nov.

(Figs. 143,422)

This species closely resembles the previous species *caudata* and differs from *caudata* in the following:

Female: Length 5.4mm. Colour similar to *caudata*. Head width equal to its length; relative measurement of POL:26, OOL:5; relative measurements of length of antennal segments: scape: 40, pedicel:4 ring segment : 3.5, fourth segment : 9, fifth : 8, sixth: 8, seventh :7.5, eighth: 10, ninth: 6, tenth: 8 and club: 16. Relative width of antennal segments pedicel: 4.5, ring segment: 4, fourth: 5.5, sixth: 5,

seventh; 5.5, eighth; 6, ninth; 6.5, tenth; 7 and club; 7. Apex of scutellum slightly emarginate; propodeum with distinct median carina; gaster with first tergite with only two basal carinae, carina longer than space between them; first gastral tergite half length of gaster (Fig. 143).

Holotype: F. PHILIPPINES, Mindanao, Dapitan, C.F.Baker, 1927 (USNM).

11. Genus **STHULAPADA** gen. nov.

(Figs. 144, 423)

Type-species: *Sthulapada padata* sp. nov.

Head (Fig. 423) wider than thorax; scrobe deep, not quite reaching front ocellus; antennal club pointed (Fig.144); preorbital carinae joining behind front ocellus; pronotum with a median tubercle; prothorax and mesothorax convex; hind femora greatly swollen; hind tibia greatly clavate; hind tarsal segment (especially distal segment) unusually and greatly swollen; ovipositor sheath with a tooth on ventral side.

This genus comes near *Oxycoryphe* but differs from it in having peculiarly developed hind tarsal segments and ovipositor sheath with a distinct apical tooth (Fig.144).

Etymology: '*Sthulapada*' origin from Sanskrit: '*Sthula*' meaning 'swollen', '*papa*' meanig 'leg'. Feminine gender.

1. *Sthulapada padata* sp. nov.

(Figs. 144, 423)

Female: Length 4.79 mm. Black; antennae and legs brownish yellow; tegulae and base of gaster laterally pale brownish yellow; eyes and ocelli pale yellowish. Forewing hyaline with brownish infuscation

adjoining marginal vein, veins pale brown. Head (Fig. 423) width 1.15x its length; pre and postorbital carinae well developed, postorbital carinae running close to eye margin upto vertex; fronto-genal sulcus carinate; genotemporal furrow distinct; scrobe striated, not quite reaching front ocellus; relative measurement of POL: 26, OOL:8. Antenna as in figure 144, scape not at all reaching front ocellus. Thorax with two median tubercles on pronotum; pits on pronotum and anterior part of mesoscutum close and interstices narrow and rugose; interstices on median parts of mesoscutum, scapulae and scutellum wider, smooth, shiny and ecarinate; apex of scutellum unilobed, rounded; propodeum flat with submedian and sublateral carinae distinct, median carina and accessorial carinae partly distinct anteriorly; lateral post-spiracular teeth slightly indicated. Forewing with postmarginal vein indistinct; marginal shorter than stigmal with a distinct break before reaching submarginal, distal end of submarginal clavate. Hind coxa without a dorsobasal tooth or carina; hind femora greatly swollen (Fig.144) with a distinct inner basal tooth, outer ventral margin weakly bilobed with a row of comblike teeth; hind tibia with an extra external carina; hind tarsal segments relatively larger, fifth tarsal segment extremely larger, tarsal segments densely pubescent. Gaster longer than thorax; first tergite with three basal carinae on dorsal side, length of carina subequal to width between it and nearest carina; length of first tergite a trifle less than half length of gaster, smooth and shiny, posterior margin convex; second tergite smooth and shiny with a single row of small pits on posterior dorsal margin, sides sparsely pitted and pubescent, posterior margin almost straight; third to fifth tergite shagreened with an irregular single row of small pits on their posterior dorsal margins; sixth tergite distinctly pitted, interstices rugulose; posterior margins of second to sixth tergite not emarginate. Epipygium carinate at middle, its median length subequal to median length of sixth tergite when measured from dorsal side. Ovipositor sheath peculiar with (Fig 144) a distinct ventral tooth directed posteriorly:

Male: Unknown.

Holotype: F. MALAYSIA, S. Sabah; Coll. Achterberg, 13-24 ii-24.iii.1987 (RNHL). *PARATYPE* 1F. MALAYSIA, Negri S ; Coll P. & M. Baker.9. x. 1979 (AEI)

12. Genus **HALTICHELLA** Spinola

(Figs. 145-153, 424-426)

Halticella Spinola, 1811:148. Type-species: *Chalcis bispinosa* Fabricius as suggested by Masi, 1929.

Halticella Stephens, 1829: 36 unjustified emendation.

The known synonyms are : *Microchalcis* Kieffer (1904) and *Haltichelloides* Steffan (1955). Great controversy existed regarding the type species of this genus till recently until Bouček settled the matter (Bouček, 1988). Accordingly *Chalcis bispinosa* Fabricius is taken as the type species of this genus here. The genus can be easily separated from other genera of Oriental Chalcididae by the key to genera given in this work. Biology: one species is reported to be parasitic on lagriid beetles (Bouček, 1988). This genus is found distributed in Africa, Europe, Asia and America.

KEY TO ORIENTAL SPECIES OF *HALTICHELLA* SPINOLA
(FEMALES ONLY)

1. Gaster with two basal carinae on first tergite (Fig.146)2.
- Gaster with more than two carinae.....7
2. Antennal club with peculiar brown micropilar area on ventral side; frons and scrope deeply concave as in *Antrocephalus*; apex of scutellum with very large teeth (Fig. 145); postmarginal distinctly longer than marginal**ACHTERBERGI** sp. nov.
- Not as above or with different combination of characters....3.
3. Hind tibia with a characteristic curved tooth (Fig. 147) at apex; postmarginal absent; club with micropilosity beneath.....**CINCHONICA** sp. nov.
- Hind tibia not as above; other characters partly or wholly different4

4. Gaster long and pointed in female (Fig. 148), much longer than thorax; apex of scutellum with much smaller teeth than in alternate; legs brownish red; antennal scape slightly swollen at base..... **DELHENSIS** R.&F.
 — Not as above; characters partly or completely different.....5
5. Scape definitely and clearly reaching front ocellus (in female)6
 — Scape not reaching front ocellus in males and females; first gastral tergite smooth with two basal carinae; apex of scutellum as in figure 149.....**VARIICOLOR** Masi
6. Second gastral tergite with characteristic pits (Fig. 391) in male and female; first tergite of gaster smooth and polished in male**MACROCERA** Waterst.
 — Second tergite with simple punctures (not as in the alternate); first gastral tergite shagreened or microsculptured in male....
**NIPPONENSIS** Habu
7. Antenna strongly clavate (Fig.150); hind femur with a long row of comb-like teeth on two-third ventral margin from apex; hind coxa with a small tooth or protuberance near dorsobasal side; apex of scutellum with two slightly diverging teeth (Fig. 151); carinae of first gastral tergite shorter than that of alternate (mainly three carinae with an additional two weak carinae)**CLAVICORNIS** Ash.
 — Antenna not clavate; hind femur long (Fig. 152) with a short comb of teeth at distal one-third of ventral margin; hind coxa without tooth or protuberance; apex of scutellum as in figure 153; first gastral tergite usually with four long carinae at base.....**LUZONICA** Masi

Species unplaced in the key for want of details:

Haltichella nigroclava R. & F.

1. *Haltichella achterbergi* sp. nov.

(Figs. 145, 146)

Female: Length 4.2mm. Black; eyes and ocelli yellowish brown; tegulae yellowish brown; forewings hyaline with brownish tinge and two brownish infuscations, one adjoining marginal and the other beyond stigmal; antennae black with pedicel, ring segment and first two funicular segment blackish brown; ventral base of scape, trochanters, bases and apices of fore and mid femora, bases and apices of fore and mid tibiae, ventral apical part of hind tibiae and hind tarsi brown; fore and mid tarsi yellowish brown. Head width 1.13x its length, wider than maximum width of thorax; relative measurements of POL: 30 OOL: 8; scrobe striated, reaching front ocellus; frons relatively deeper; pre and post orbital carinae present; frontogenal sulcus moderately carinate; frontogenal furrow shallowly represented; vertex narrow; temples narrow. Antenna with scape distinctly reaching front ocellus, relative measurements of length of segments: scape:7, ring segment: 3, fourth segment: 6, fifth:5, sixth:5.5, seventh:6, eighth:5, ninth:6, tenth:5.5, club:15; relative measurements of width of segments: pedicel:4, ring segment:4, fourth, fifth and sixth 5 each, seventh: 5.5, eighth:6, ninth:6.5, tenth and club 7 each. Club with micropilosity on ventral side. Thorax with close pits on notum, interstices narrow, slightly carinate and rugose; apex of scutellum with two long teeth (Fig. 145); propodeum with lateral costae and sublateral carinae very distinct, accessory carinae indistinct, submedian carinae distinct, lateral teeth behind spiracle small. Forewing with relative measurements as follows: submarginal:138, marginal:26, postmarginal:30, stigmal:12. Hind coxa with a dorsobasal tooth; hind femur length 2.25x its width, without an inner basal tooth, outer ventral margin with a long row of comb of teeth, without any distinct lobe. Gaster (Fig. 146) distinctly shorter than thorax; first tergite smooth and polished, with two basal carinae, posterior margin not emarginate; second tergite smooth and polished on dorsal side medially, laterodorsal side punctured and pubescent; sixth tergite rugosopunctate and pubescent.

Male: Length: 4mm. Similar to female except in having stouter antennae, shorter gaster and infuscation near stigmal unclear.

Holotype: F., MALAYSIA, S.W.Sabah, C.V. Achterberg, 1-13. iv.1987 (RNHL). *Paratype*: 1M. same data as for holotype. 1F. MALAYSIA, Negris, P. & M. Baker, 2.ii.1980 (AEI).

Remarks: This is a unique species which differs from all other Oriental species in having micropilosity on venral side of antennal club and apex of scutellum with unusually long teeth (Fig. 145) and in several other features.

2. *Haltichella cinchonica* sp. nov.

(Figs.147,424,425)

Female: Length 2.98mm. Black; eyes blackish; ocelli yellowish brown; scape, fore and mid legs (except coxae) and tegulae yellowish brown; hind femora liver brown; hind tibia black with dorsal region and apical region brown. Forewing hyaline; veins pale brown. Head (Fig.424) width 1.28x its length, subequal to maximum width of thorax; scrobe striated, almost reaching front ocellus; preorbital carinae distinct, indistinct behind front ocellus; postorbital carinae present, running close to posterior margin of eyes towards vertex; frontogenal sulcus carinate; relative measurements POL:25, OOL:3. Antenna with scape almost reaching front ocellus, club with micropilosity on ventral side, relative measurements of length of segments : scape:48, pedicel:6, ring segment:3, fourth segment : 7, fifth :8, sixth:9, seventh: 10, eighth:8,ninth:7 tenth:7, club: 24; relative measurements of width of segments : pedicel : 6, ring segment:6, fourth segment :8, fifth:8.5, sixth :10,seventh :10.5, eighth:11, ninth:11.5, tenth:12 and club:13. Thorax with pits on notum close, interstices narrow, rugose and carinate on pronotum, interstices narrow and ecarinate on mesoscutum and scutellum: interstices rugose on anterior part of mesoscutum, smooth and shiny on remaining part; apex of scutellum weakly emarginate. Propodeum with distinct areolae, submedian carinae distinct, postspiracular teeth distinct. Hind coxa with a tooth on basodorsal

area, hind femora (Fig.147) without an inner basal tooth; outer ventral margin with a row of comb of teeth without forming any lobe but with a prominent basal tooth; hind tibia with an unusual curved tooth as in figure 147, with usual spurs at apex indistinct. Forewing with postmarginal absent, marginal longer than stigmal. Gaster (Fig.425) distinctly longer than thorax; first tergite with a pair of short basal carinae on dorsal side, smooth, posterior margin not emarginate, convex; second tergite smooth, not emarginate, almost straight, third to fifth tergites rugose and emarginate posteriorly; sixth tergite rugosopunctate.

Holotype: F. INDIA, Tamil Nadu, Annamalai Hills, Cinchona Coll.P.S.Nathan, May 1957 (BSRI)

Remarks: This is a unique species with an unusually large curved spine at apex of hind tibia and without any distinct spurs. Antennal club is with micropilar area on ventral side and postmarginal vein is absent.

3. *Haltichella delhensis* Roy & Farooqi

(Fig. 148)

Haltichella delhensis Roy & Farooqi, 1984 : 26, F., INDIA, Delhi (IARI) (examined).

Diagnostic features: Black; legs and tegulae reddish brown; scape, pedicel, ring segment and first few funicular segments testaceous to reddish brown, rest of flagellum dark brown; pre and postorbital carinae present; scrobe reaching front ocellus; thorax with close pits and interstices narrow; apex of scutellum with two small teeth. Gaster long and pointed as in figure 148.

Host : Unknown.

Distribution : India.

Materials examined : 47 F. and 3 M. from different places in INDIA (Kerala, Coll. Narendran & Party during 1985-86). 1 M., INDIA, Karnataka, Bangalore, Ghorpade, 30-iii-1978.

4. *Haltichella variicolor* Masi

(Figs. 149, 426)

Haltichella variicolor Masi, 1929: 177, Lectotype F., PHILIPPINES, Mindanao (USNM no.H.1766) (examined).

Diagnostic features: Black; scape, pedicel, ring segment, base of first funicular segment yellow; bases and apices of fore and mid tibiae yellow (middle portion brownish black); hind femur brownish black; gaster dark brownish black; punctures on thorax close, interstices carinate; apex of scutellum as in figure 149; first gastral tergite with two distinct carinae at base; hind femora (Fig. 426) length 2.33x its width, outer ventral margin with a long row of small comb-like teeth with first tooth prominent.

Host : Unknown.

Distribution: India, Taiwan, Malaysia, Philippines and Borneo.

Materials examined: Syntypes. Other materials: 1 F., INDIA, Tamil Nadu, Shevaroy Hills, Yercund, P.S. Nathan, xii.1964, 2 F. 2M. Tamil Nadu, Annamalai Hills, Cinchona, P.S. Nathan, 1956-1962. 3F., MALAYSIA, Negris, P. & M. Baker, 20.x.1978 to 20.v.1979.

5. *Haltichella clavicornis* (Ashmead)

(Figs. 150, 151)

Stomatoceras clavicornis Ashmead 1904b: 148, F. JAPAN (USNM) (examined)

Haltichella macroclava Roy & Farooqi 1984: 27, F. INDIA, Delhi (IARI) (examined) *syn. nov.*

This species is characterised by unusually stout antennae as in figure 150. A detailed and good redescription is given by Habu (1960).

I have examined the holotype of *macroclava* as well as the lectotype of *clavicornis* and found them to be the same.

Host: Unknown

Distribution: India, Japan, Vietnam, Laos, Malaysia, Nepal and Philippines.

Materials examined: Apart from the primary types, the following specimens examined: 14 M. INDIA, Kerala, Silent valley, Narendran & party, 15.v.1985. 1 M. Kerala, Vadakkanchery, Narendran & Party, 1985. 2 M. Kerala, Malampuzha, Narendran & Party, 1985, 6 M. Kerala, Nilambur, Narendran & Party, 20.v.1985. 1 M. Kerala, Ferooke, Narendran & Party, 27.x.1985. 1M. & 2F. Kerala, Parambikulam, 1985 6M. Kerala, Thekkedy, Narendran & Party, v.1986. 1M. Tamil Nadu, Coimbatore, Narendran & Party, 28.ix.1987. 460 M. 148 F. Kerala, Calicut Uni. Campus, Narendran & Party, 1985-1987. 1F. 5M. INDIA, West Bengal, Salt Lake area, S.K. Gupta, 6-12.iv.1982. 1M. INDIA, Jabalpor, P.S. Nathan, viii. 1957. 1M. NEPAL, Kathmandu, Godavary, 15.viii. 1967. 1M, Philippines, Mindanao, Baker 1927. 1M. VIETNAM, I.W. Quat, 19-21.v.1960. 1M. LAOS, Native collector, 15-31.v. 1965. 4F MALAYSIA, Negriz, P. & M. Baker, 1978-1979. 1F. TAIWAN, H. Townes, 7.v.1983.

6. *Haltichella luzonica* Masi

(Figs. 152, 153)

Haltichella luzonica Masi 1929 : 179, Lectotype F PHILIPPINES, LosBanos (USNM no 41888) (examined).

Diagnostic features of lectotype : *Female:* Length 2.8mm. Black; apex of hind tibia, trochanter of hind femur, hind femur basally (slightly), middle regions of fore and mid femur and tibiae liver brown; fore and mid tarsi pale yellow. Head distinctly wider than thorax; scrobe not quite reaching front ocellus; preorbital carinae present; postorbital carinae indistinct. Thorax with close pits; apex of scutellum as in figure 153. Hind coxa without basodorsal tooth or carina; hind femur (Fig.152) with a small area of comb of teeth at distal lobe, without an inner basal tooth. Gaster length subequal to thorax with four long longitudinal carinae at base on dorsal side; first tergite smooth, second tergite smooth on middle dorsal portion, lateral parts microsculptured and pubescent; sixth tergite reticulate.

Host: Unknown.

Distribution: Philippines, Nepal and India.

Materials examined: Apart from the primary types, about 35 M. and 26 F. collected from various places in India by Narendran & Party 1985-1987. 2F. 2M. NEPAL, 1967, Coll.: Unknown. 6M. 3F. PHILIPPINES, R. Brown, date unknown.

7. *Haltichella macrocera* Waterston

(Fig. 391)

Halticella macrocerus Waterston 1922:23, M., INDIA, Kumaon valley (BMNH no. 5286) (examined).

Dromochalcidia indica Mani & Dubey 1974: 4, F., NEPAL (USNM) (examined) **syn. nov.**

I examined the female holotype of *Dromochalcidia indica* and found it to be the same as *macrocera*. This species is characterised by peculiar types of pits on second tergite of gaster (Fig. 391) which makes it different from most other species. The other main characters are 1) apex of scutellum distinctly bidentate with large teeth, 2) forewing with infumation darkest behind marginal and tending to form a transverse band, 3) another broad band beyond veins at distal half and 4) gaster with two distinct basal carinae.

Host: Unknown.

Distribution: India, Nepal, Malaysia.

Materials examined: Apart from the above mentioned primary types: 2F., INDIA, Kerala, Calicut University Campus, Narendran & Party, July and August 1987. 3F., 11 M., NEPAL, Katmandu. Godavary., Coll. Can.exp. 14.vi.1967 to 23.viii.1967 1F., INDIA, Kerala, Cardamom Hills, Achankovil, Mani & Party, 15.iv.1973.

8. *Haltichella nipponensis* Habu

Haltichella nipponensis Habu, 1960:245, F. JAPAN (NIAS).

Diagnostic features: Black; antennae brown, slightly reddish, segments six to terminal segment black; apical projections of scutellum slightly reddish; fore and mid coxae, trochanters, femora slightly dark; hind coxae and femora almost black or reddish black with hind trochanters and base of femora brown; hind tibia almost black or reddish; antennal scape long reaching front ocellus, longer than segments four to eight combined; eyes pubescent; hind coxa with coxal tooth on basodorsal side; hind femur 2.25x as long as wide.

Host: Unknown.

Distribution: Japan, India and Taiwan (New Record).

Materials examined: 5 F. TAIWAN, Wushe, Coll. H. Townes, 1983. 1 F. Kumaon Hills, Gupta, 6.v.1964.

UNPLACED SPECIES**9. *Haltichella nigroclava* Roy & Farooqi**

Haltichella nigroclava Roy & Farooqi, 1984:29. F. INDIA, Delhi (IARI) (examined)

I examined the female holotype which is extremely in poor condition. Thorax and head are found separated with both hind tibiae missing totally. It is difficult to assess the correct identity of this species because of the poor condition of the holotype especially when hind tibiae are missing.

Host: Unknown.

Distribution: India (Delhi).

Materials examined: Holotype and paratype

13. Genus **NEOHALTICHELLA** gen.nov.

(Figs. 154-159, 427-433)

Type-species: *Neohaltichella thresiae* sp.nov.

Head as wide as or subequal to width of thorax with well developed preorbital carinae; scrobe narrow; preorbital carinae on vertex faintly represented behind front ocellus; mesoscutum and scutellum more convex than in typical *Haltichella*; ventral margin of hind femur without a prominent dent. Head and body more pubescent than in *Haltichella*. Gaster without basal carinae.

This genus differs from *Haltichella* in having gaster without carinae at base; first tergite of gaster relatively shorter and in having head and thorax stouter and more pubescent than in *Haltichella*. It differs from *Neochalcis* by the characters mentioned in the key to genera above.

KEY TO ORIENTAL SPECIES OF **NEOHALTICHELLA** gen.nov.

1. Pedicel long (Figs. 155, 156), distinctly longer than first funicular segment (fourth antennal segment); gaster a little shorter than thorax2
- Pedicel relatively short, much shorter than first funicular segment; gaster longer than thorax or at the most as long as thorax, not at all shorter than thorax.....3
2. First tergite of gaster with microsculptures on disc; forewing with a brown infuscation adjoining marginal vein; length of eye less than 2.5x length of frontogenal sulcus in profile; POL more than 10x OOL; antenna (Fig. 155) with a distinct pattern of red and black colour (club, ring segment, first funicular segment, base of second funicular segment red).....**THRESIAE** sp.nov.
- First tergite smooth, forewing hyaline without any infuscation near marginal or other place; length of eye in profile more than 2.5x length of frontogenal sulcus in profile; POL less than 6x

OOL; antenna (Fig. 156) black and without any distinct pattern of colour.....**NITIGASTRA** sp. nov.

3. Gena short (Fig. 157); posterior genotemporal furrow absent; maximum length of eye in profile little less than 4x length of frontogenal sulcus; head and body densely pubescent; postmarginal vein a trifle over 1.4x marginal; antenna as in figure 157; thorax convex; sixth tergite distinctly pitted with four to five transverse rows of pits.....

.....**BREVIGENA** sp. nov.

- Gena long; posterior genotemporal furrow present; maximum length of eye in profile 1.65x frontogenal sulcus; head and body not as in alternate; postmarginal subequal to marginal or hardly a little longer than marginal; antenna as in figure 159; sixth tergite rugosopunctate without having distinct rows of pits ...

.....**NILGIRICA** sp. nov.

1. **Neohaltichella thresiae** sp. nov.

(Figs. 154, 155, 427, 428)

Female : Length 4.26-4.32 mm. Black; antenna black with club, ring segment, first funicular segment, base of second funicular segment reddish brown; trochanters, basal and apical extremities of fore and mid femora, basal and apical ends of fore and mid tibiae brownish; fore and mid tarsi pale yellowish brown. Forewing hyaline with a small brownish infuscation adjoining marginal vein, pubescence silvery. Head as in figure 154, as wide as width of thorax; relative measurement of POL:39, OOL : 3.5; frontogenal sulcus carinate; antennal scape almost reaching front ocellus, segments as in figure 155. Genotemporal furrow indistinct; preorbital carinae present; postorbital carinae running behind eyes towards dorsal side. Thorax with close pits on notum, interstices narrow, carinate, rugulose in some parts; scutellum with apex distinctly bilobed; propodeum (Fig. 427) slightly slanting with distinct submedian carinae, sublateral carinae distinct, median carina irregular; lateral teeth indistinct. Forewing with relative measurement of veins: submarginal: 103, marginal : 16, postmarginal : 21, stigmal: 7.

Hind coxa with a distinct tooth on basodorsal side; hind femur length about twice its width, without an inner basal tooth, outer ventral margin with a row of comb-like teeth, not distinctly bilobed. Gaster (Fig. 428) distinctly shorter than thorax (20:17); first tergite without basal carinae, a semirectangular basal pit present; disc microsculptured on posterior half; tergites second to five densely microsculptured; sixth tergite rugosopunctate; epipygium carinate at middle.

Male : Unknown.

Holotype : F. INDIA, Kerala, Tenjipalam, Narendran & Party 6.xi.1985 (DZCU). *Paratype* : 1 F. of same data except coll.date 15.xi. 1985,

Remarks : This is a remarkable species with characteristic head, antennae and gaster. It comes near *nitigastra* in general appearance but can be separated from it as mentioned in the key to species above.

2. *Neohaltichella nitigastra* sp.nov.

(Figs. 156, 429-431)

Female : Length 3.12—3.69mm. Black; eyes pale yellowish brown, fore and mid legs liver brownish black except pale brown bases and apices of tibiae, femora and tarsal segments. Hind tarsal segments pale brown. Wings hyaline without blackish or brownish patches or infuscations; pubescence silvery. Head (Fig.429) width about 1.25x its length, subequal to maximum width of thorax; eyes and frons pubescent; preorbital carinae present; interantennal projection prominent; frontogenal sulcus carinate; scrobe reaching front ocellus; antennae (Fig. 156) with scape not reaching front ocellus. Thorax convex with close pits on notum, interstices carinate, rugose; apex of scutellum (Fig.430) emarginate and bilobed. Propodeum subperpendicular with distinct pits; median, submedian and sublateral carinae distinct; postpiracular teeth distinct. Hind coxa with a dorsobasal tooth; hind femur length about twice its width, without an inner basal tooth; outer ventral margin weakly bilobed. Forewing with relative proportions of veins: postmarginal: 21, marginal: 19, submarginal:

102, stigmal : 7. Gaster (Fig.431) a trifle shorter than thorax (50:53); basal tergite without basal carina but with a pit; smooth and shiny without microsculptures or shagreening on dorsal side; second and third tergites finely microsculptured on sides, smooth and polished on dorsomedian area; fourth and fifth tergites microsculptured; sixth tergite shallowly punctate with interstices rugose. Epipygium moderately carinate at middle.

Male : Unknown.

Holotype: F. PHILIPPINES, Tungalon, C.F. Baker, 1927 (USNM).

Paratype : F. Same data as the holotype except locality, Samar Island.

3. *Neohaltichella brevigena* sp. nov.

(Figs. 157, 158, 432)

Female : Length 4.6mm. Black; fore and mid tarsal segments pale yellowish brown; pubescence silvery on head and thorax; pubescence on ovipositor sheath and on sides of gaster brownish. Wings hyaline with brownish tinge. Head (Fig. 432) width 1.26x its length, equal to maximum width of thorax; preorbital carinae present; postorbital carina as in figure 157; relative measurements of POL : 26, OOL:3. Frontogenal sulcus distinct but not very carinate. Gena extremely narrow; genotemporal furrow absent; frons deeply concave; scrobe reaches front ocellus; antenna (Fig. 158) with scape not at all reaching front ocellus; preorbital carinae present, indistinct behind front ocellus; head densely pubescent. Thorax convex with close pits on notum, interstices narrow, carinate and microsculptured, somewhat densely pubescent on thoracic notum; sides of metapleura, ventral side of hind coxa, outer side of hind femur and hind tibia somewhat densely pubescent; apex of scutellum distinctly bilobed; forewing with relative measurement of veins: submarginal: 133, marginal : 17, postmarginal : 24, stigmal: 8. Hind coxa with a coxal tooth at base; hind femur length 2.14x its width without an inner basal tooth; outer ventral margin with a row of comb of teeth, without distinct lobes. Gaster longer than thorax (50:44); first tergite without basal carinae, with basal pit

smooth and shiny; second to fourth tergites smooth on proximal half of dorsal side, microsculptured and pitted on distal half; fifth tergite microsculptured and pitted; sixth tergite with five to seven distinct rows of round pits, interstices narrow and rugulose; epipygium hardly carinate in middle with dense brownish pubescence.

Male: Unknown.

Holotype: F. INDIA, Tamil Nadu, Annamalai Hills, P.S. Nathan, V. 1969 (BSRI)

4. *Neohaltichella nilgirica* sp. nov.

(Figs. 159, 433)

Female: Length 4.15mm. Black; scape, pedicel, distal half of club, middle part of fore and mid femora and middle parts of fore and mid tibiae liver brown. Bases and apices of fore and mid femora and bases and apices of fore and mid tibiae pale brownish; fore and mid tarsal segments pale yellowish brown; apex of hind tibia and tarsal segments brown. Pubescence whitish. Head width (Fig. 433) 1.13x its length, subequal to maximum width of thorax; pre and postorbital carinae present; postorbital carinae running upwards towards vertex; scrobe reaching front ocellus; frontogenal sulcus carinate; genotemporal furrow slightly indicated; antennae (Fig. 159) with scape not reaching front ocellus; pedicel relatively short; height of eye in profile 1.68x length of frontogenal sulcus. Thorax with close pits on notum, interstices narrow and rugulose, ecarinate; apex of scutellum distinctly bilobed; propodeum not horizontal; submedian carinae distinct, other propodeal carinae not well defined; lateral teeth indistinct. Forewing with relative proportion of veins: submarginal: 123, marginal: 15, postmarginal: 16, stigmal: 7. Hind coxa with a tooth near base on dorsal side; hind femur without an inner basal tooth; its length about twice its width, not distinctly bilobed. Gaster a little longer than thorax (66:62); first tergite without basal carinae, with a basal pit, faintly shagreened posteriorly; second tergite to fifth tergite microsculptured and pitted on distal half on dorsal side; sixth tergite shallowly punctate, rugose and reticulate; epipygium carinate and pubescent.

Male: Unknown.

Holotype: F. INDIA, Tamil Nadu, Nilgiris, P.S.Nathan, x-1960 (BSRI)

14. Genus **TROPIMERIS** Steffan

(Figs. 160—161)

Tropimeris Steffan 1948:118. Type-species : *Tropimeris excavata* Steffan by original designation.

This genus is found from Africa to Sumbawa Island. This genus belongs to the tribe Tropimeridini which has the venation reduced as in Hybothoracini but the hind leg characters are more like that of Haltichellini. Diagnostic features: Head nearly triangular with long converging genae which are slightly longer than breadth of small mouth; antennae inserted far above mouth; in dorsal view head strongly transverse; temples posteriorly strongly carinate; preorbital carina absent; postorbital carina present though blunt; frontogenal sulcus absent. Antenna short, scape tapering distally; pedicel subglobose; flagellum subclavate, ring segment short; clava three segmented. Notaular grooves partly blurred; propodeum very slightly sloping. Legs slender, hind femur strongly tapering basally (Figs. 160, 161), ventrally with one or two sharp angular teeth with comb of teeth confined to distal third. Hind tibia with additional external carina. Gaster sessile with first tergite with a number of longitudinal carinae on dorsal side.

1. *Tropimeris monodon* Boucek

(Figs. 160, 161)

Tropimeris monodon Boucek 1958:481, F. INDIA, Bombay (NM)

A detailed description of the species is given by Boucek (1958). The colour of this species is quite variable from reddish brown to black in almost all parts of body. The most identifying

feature of this species is that each hind femur has one sharp dent (Fig.161); funicle segments two to seven in female distinctly transverse, about 1.5 to 2x as wide as long; genal depression in male filled by crowded scales.

Host: Pupae of *Exealtis atomosa* Walshm. (Lep. Pterophoridae)

Distribution: South and South East Asia.

Materials examined: 49F. 16M. Coll. Narendran & Party from Kerala during 1985—1987. 1F. 1M. Aligarh, Hayat, 1985 and some specimens present in (IARI).

2. *Tropimeris indicus* Husain & Agarwal

Tropimeris indicus Husain & Agarwal 1981a:36, M. INDIA, Aligarh (ZDAMU)

I could not examine the holotype or paratype of this species inspite of my repeated efforts. Request for types remained unanswered. The inadequate original description and drawings indicate that this may be identical with *Tropimeris monodon* Boucek.

Host: Said to be reared from *Spilosoma obliqua* Walker (Lep. Arctiidae).

3. *Tropimeris excavata* Steffan

Tropimeris excavata Steffan 1948:118, F. W. AFRICA (MNHN).

This is an extralimital species but I am including it here because it is likely that it may be found in the Oriental Region. A good description is provided by Steffan (1948) and a redescription is provided by Boucek (1958).

Diagnostic features: Hind femur with two sharp dents; funicle segments of female only very slightly transverse; genal depression in male with bottom finely punctured, without scales.

Host: Unknown.

Distribution: Africa.

15. Genus BUCEKIA Steffan

(Figs. 162—164)

Bucekia Steffan 1951b : 82. Type-species: *Lasiochalcidia differens* Boucek by original designation.

This genus has very close resemblance to *Lasiochalcidia* (Latreille) but differs from that species in having vertex raised as in figure 162, hind tibiae with a conspicuous plate-like formation as in figure 164; apex of scutellum with dents very short. This genus is distributed in Africa, Asia, Mediterranean regions and Europe.

1. *Bucekia differens* (Boucek)

Lasiochalcidia differens Boucek 1949; 143, F. PALESTINE (MNHN).

Diagnostic features: Pedicel longer than any of the following segments of the flagellum; scape long, slender, not dent like enlarged at base, club as long as four preceeding segments together; club with micropilosity on ventral side; last segment of funicle transverse; antennae relatively short; hind femur only slightly more than twice as long as wide, very sparsely punctured, uniformly pubescent, longest hairs as long as width of posterior tibia; height of eye in profile 1.5x length of malar space below eyes.

Host: Unknown.

Distribution: Europe, Africa, Mediterranean region and Asia.

Materials examined: 3F. INDIA, Kerala, Kallai, Narendran & Party, v -viii, 1987. 2F. Nilambur, Narendran & Party, ii -viii.1987, 2F. Kerala, Calicut, West Hill, Narendran & Party, 15.v.1987. 5F. Kerala, Thekkedy, v.1986. 1F. Kerala, Calicut Uni. Campus, 8.iii. 1986. 1F. S.W.AFRICA, R.E.Turner, 2-18.iii.1928. 1F. SRILANKA, Coll. Halstead, 13. iv. 1968

16. Genus **STENINVREIA** Boucek

(Figs. 165, 166, 434-436)

Steninvreia Boucek 1988: 58. Type-species : *Xenarretocera tricarinata* Girault, by original designation.

With typical characters of Hybothoracini; punctures on thorax sparse; antennae inserted at mouth level; forewing with a single vein ending with a short strong curve removed from anterior margin (Fig.166); body pilosity not conspicuous. Head mostly stout; scrobe not at all reaching front ocellus; frons without preorbital carina; antenna with scape not reaching front ocellus; pronotum with conspicuous quadrangular collar, its sides almost parallel or constricted posteriorly; propodeum horizontal with strong carinae and sides converging strongly to constriction; hind femur broad and convex with comb on ventral edge shifted to distal third, comb beginning with strong tooth; hind tibia stout, more or less clavate, its dorsal outline convex. Gaster with petiole forming a subtriangular sclerite ventrally (Figs.165, 166); first gasteral tergite with two to several carinae at base. The genus is extremely close to *Notaspidium* and *Notaspidiella* from which it can be separated by the characters mentioned in the generic key in this Monograph. This genus is present in South Asia, Australian Region and in the Solomons.

KEY TO ORIENTAL SPECIES OF *STENINVREIA* BOUCEK

1. Thoracic notum slightly convex (Fig.166); gaster with first tergite smooth; height of eye about twice length of gena below eyes; flagellum not clavate.....**ANUPAMA** sp. nov.
- Thoracic notum flat (Fig.165); gaster with first tergite punctate; height of eye in profile a trifle over twice length of gena below eyes; flagellum clavate.....**NOYESI** sp. nov.

1. *Steninvreia noyesi* sp. nov.

(Fig. 165)

Female: Length 2.89 mm. Black with faint greenish tinge on head and thorax; scape, pedicel, most parts of fore legs, most parts of fore and mid legs; apices of hind tibiae and hind tarsi testaceous; wings hyaline, veins pale yellowish brown. Headwidth a little over its length; finely punctured, interstices with faint reticulations, half as broad as diameter of pits; adorbital groove faintly indicated; scrobe ending far from front ocellus; length of frontal shelf distinctly less than breadth of vertex; POL a trifle less than 5x OOL. Flagellum slightly clavate, scape not reaching front ocellus; width of head a trifle over maximum width of thorax. Thorax with pronotum slightly constricting at sides caudad, dorsally punctured with interstices as broad as diameter of pits, microsculptured, in some places interstices wider, especially on scutellum; notum especially scutellum flat and almost in the same level of propodeum, hind margin regularly semicircular and carinate; propodeum not strongly tapering caudad as in *petiolata* Boucek, without forming corners, longitudinal carinae strongly developed, interstices with somewhat regular transverse carinae. Gaster sessile, first tergite with transverse basal carina emitting three spaced carinae caudad, disc distinctly microsculptured posterior margin broadly rounded.

Male: Unknown.

Holotype: F. INDIA, Kerala, Calicut University Campus, Coll. Narendran & party, April 1987 (DZCU).

2. *Steninvreia anupama* sp. nov.

(Figs. 166, 434-436)

Male: Length 4.1mm. Black; eyes yellowish black; fore and mid legs (except black coxae) brown; hind femur liver brownish black with base pale brown; hind tibia liver brownish black with apex pale brown; tarsal segments brown; antennal scape and pedicel

brown; rest of antennal segments brownish black. Head (Fig.434) width subequal to its length with a distinct shallow close pits. Frons convex; scrobe relatively small, striate, ending far away from front ocellus; frontogenal sulcus indistinct; genotemporal furrow absent. POL a trifle less than 5x OOL; pre and postorbital carinae absent. Thorax (Fig.435) with pronotum characteristically large, somewhat bell-shaped from dorsal view; pits on notum shallow, sparse, deep and distinct on mesoscutum and scutellum; interstices wider than diameter of pits in most places with characteristic microsculptures; apex of scutellum rounded; propodeum long, narrowing posteriorly with a distinct long carinae. Forewing with pilosity extremely reduced, almost absent, veins as in figure 166. Hind femur with a small comb of teeth limited to outer distal end of ventral margin, first tooth relatively large without inner basal tooth; hind coxae without ventromesal or dorsobasal teeth. Gaster (Fig. 436) with distinct neck-like basal region, joining a small subtriangular ventral petiole; first tergite with three basal carinae and two lateral rugae, median carina shorter than lateral carinae; first tergite smooth and shiny, impunctate, its posterior margin pointed towards posterior region; second and third gastral tergite slightly notched in median part of posterior margin; sixth tergite perpendicular with a median ridge and strong microsculptures.

Female: Unknown.

Holotype: M. PHILIPPINES, Mindanao, Zamboanga, Coll.C.F. Baker 1927 (USNM).

17. Genus *HAYATIELLA* gen.nov.

(Figs. 167-169, 437)

Type-species: *Hayatiella aligarhensis* sp. nov.

With typical characters of Hybothoracini, such as forewing with a single vein removed from anterior margin; punctures on thorax rather sparse and antennae inserted at mouth level.

Head width a trifle over 1.25x its median length; frons without keels or puncta forming groove near orbit; scrobe not reaching

ocellus. Thorax with mesoscutum and scutellum distinctly convex; apex of scutellum emarginate; not rounded in dorsal view. Propodeum horizontal, posterior sides forming corners; hind femur as in figure 168 with comb of teeth shifted to distal edge; hind tibia slender not clavate, dorsal outline not convex. Gaster sessile with base of first tergite with three longitudinal carinae and several longitudinal carinulae as in figure 169.

This genus comes near *Steninvreia* Boucek in nature of propodeum and somewhat similar gaster (to the species *edgari* Boucek) but it differs from *Steninvreia* in having 1) very convex mesoscutum, and scutellum (and median part of pronotum also), 2) in having slender tibiae (not clavate) 3) long hind femur with peculiar distal comb of teeth without a distinct starting basal tooth, 4) narrow vertex, 5) concave occiput behind ocelli, 6) hind ocellar area raised as in '*Bucekia*' and 7) non-clavate antenna.

1. *Hayatiella aligarhensis* sp.nov.

(Figs. 167-169, 437)

Female: Length 2.1 mm. Black; eyes and ocelli yellowish black, antennae, fore and mid legs testaceous, most parts of hind coxa and hind femora liver brown, median part of hind tibia and tegulae liver brown, all tarsi testaceous, wings hyaline, veins pale brown. Head with scrobe faintly striated; frons without distinct pits, somewhat rugose, pubescent, temples narrow; vertex narrow, depressed in front view, hind ocellar area raised, somewhat like that of *Bucekia*; POL 6x OOL; antenna (Fig.167) with scape almost reaching front ocellus; funicle not clavate; club pointed. Head width subequal to width of thorax. Thorax with very shallow sparse pits, interstices shagreened on anterior part of mesoscutum and scapulae, smooth and shiny on other regions; posterior margin of pronotum with two irregular rows of setae, mesoscutum and scutellum convex; apex of scutellum slightly emarginate, propodeum with submedian carinae distinct, accessorial carinae absent; sublateral carinae weakly distinct, posterior margin forming corners, ground on propodeum granulate and rugose. Forewing hyaline, apical and marginal fringe absent;

marginal slightly curved downwards. Hind femur as in figure 168; outer disc pubescent, interstices shagreened; hind tibia not clavate, dorsal outline not convex. Gaster (Fig. 169) sessile, anteriorly very broad, without strong basal transverse carina, base with three longitudinal carinae, interstices between carinae with numerous longitudinal carinulae, their hind margins not at all reaching middle of first tergite; second to fifth tergites rugulose and pubescent at sides; sixth tergite faintly rugulose and sparsely pubescent; epipygium slightly raised.

Male: Unknown.

Holotype: F. INDIA, Uttar Pradesh, Aligarh, Coll. M. Hayat, 26.iv.1985.

18. Genus NOTASPIDIUM Dalla Torre

(Figs. 170-172, 438-439)

Notaspis Walker, 1834: 21, 37. Type-species *Notaspis formiciformis* Walker by monotypy. Preoccupied by *Notaspis* Herman, 1804.

Notaspidium Dalla Torre, 1897:87. Replacement name for *Notaspis* Walker

This genus was known only from Neotropical region until recently I reported one species viz. *Notaspidium grisselli* Narendran from India. Later Boucek (1988) published another new species viz. *Notaspidium papuanum* from New Guinea.

The species of this genus are usually conspicuous with metallic refringence. It is a typical Hybothoracini. Tegula is very large. Gaster sessile with first tergite anteriorly truncate and often carinate; part behind carina more or less depressed and with longitudinal carinae or striae, often one stronger in middle. The first tergite is never fused with second: hind femur with proximal tooth slightly larger than others and situated in middle of ventral edge; hind tibia with a characteristic faint carina beset with minute tubercle like structures on dorsal side (visible only at high magnifications).

KEY TO ORIENTAL SPECIES OF *NOTASPIDIUM*
DALLA TORRE

1. Head width 1.25x its median length; vertex in front view not prominently convex; hind femur length about twice its width; height of eye 3.46x length of gena below eyes in profile; gaster (Fig.439) with first tergite with two strong submedian carinae with two or three parallel caninulae, without median carina; disc of first gastral tergite smooth and shiny; POL 3x OOL;.....
.....GRISSELLI Narend.
- Head width 1.15x its median length; vertex in front view prominently convex; hind femur length 1.62x its width, height of eye 3.25x length of gena below eyes in profile; gaster with 4 distinct carinae as in figure 172; disc of first gastral tergite rugulose; POL less than 5x OOL.....BAKERI sp. nov.

1. *Notaspidium bakeri* sp.nov.

(Figs. 170-172, 438)

Female : Length 1.79 mm. Black with metallic green refringence, eyes pale yellow; antennae and fore legs, middle legs and hind tarsi pale brown; hind femur liver brown; hind tibia a little darker than hind femur; wings distinctly hyaline without pilosity. Head (Fig. 170) width 1.15x its length, surface with distinct pits; interstices rugose; scrobe with characteristic granulations; not reaching front ocellus; frontogenal sulcus indistinct; POL about 5x OOL; antenna with relative measurement of length of segments: scape: 18, pedicel:5, ring segment:3, fourth segment:3, fifth segment:3, sixth segment: 3, seventh segment: 4, eighth segment: 4, ninth: 4.5, tenth segment:5, club:13; relative measurement of width of segments: scape:4, pedicel:3, ring segment:2, fourth segment:3, fifth segment: 3.5, sixth segment: 4.5, seventh: 5, eighth segment: 5.5, ninth: 6, tenth: 6.5, club:7. Height of eye in profile a little more than 3x length of gena below eyes. Thorax with distinct umbilicate pits on notum; interstices smooth and shiny; apex of scutellum as in figure 170; forewing with pilosity absent; hind femur (Fig. 171)

rather broad and proximal tooth on which finely toothed comb begins situated in the middle of ventral edge, inner basal tooth absent; propodeum horizontal with a distinct submedian carinae and posterior corners; first tergite of gaster as in figure 172, rugulose on dorsal side; second tergite minutely and densely pitted on sides; sixth tergite very minutely and deasely pitted.

Male: Unknown.

Holotype: F. PHILIPPINES, Mindanao. Zamboanga, C.F. Baker, 1927 (USNM).

Remarks: This species differs from *Notaspidium papuanum* Boucek in having different structure of propodeum, gaster and anntennae.

2. *Notaspidium grisselli* Narendran

(Fig. 439)

Notaspidium grisselli Narendran 1987a:9, F. INDIA, Kerala, Silent Valley (DZCU).

This is a unique species with characteristic and extremely minute microsculptures on head and body. First gastral tergite (Fig.439) with two long basal submedian carinae and two or three parallel carinulae, length of each carina more than twice width between them.

Host: Unknown.

Distribution: India.

Materials examined: Holotype only.

19. Genus NEARRETOCERA Girault

Nearretocera Girault 1913a:84-85. Type-species: *Nearretocera johnstoni* Girault, by original designation.

Arretoceroides Girault had been regarded as a synonym of *Epitranus* by Burks (1936) and this was later corrected by Boucek (1982,1988)

who transferred it to Haltichellinae and placed it as a synonym of *Nearretocera*. This is an extralimital genus present in Australia and New Guinea. I include this here because it is likely that this may be found in Oriental Region later. The genus is closely related to *Notaspidiella* Boucek in having two large basal tergites fused but they can be separated by the characters mentioned in the key to genera in this monograph.

20 Genus NOTASPIDIELLA Boucek

(Figs. 173, 440)

Notaspidiella Boucek 1988: 56. Type-species: *Irichohalticella tirathabae* Ferriere.

This genus is close to *Notaspidium* but differs in having hind femur (Fig. 440) with normal, long comb of teeth beginning on subbasal tooth, in having first two basal gastral tergites fused and in having apex of scutellum produced (Fig. 173) posteriorly. This genus is distributed in Seychelles, Mauritius and Oriental Regions.

1. *Notaspidiella tirathabae* (Ferriere)

(Figs. 173 & 440)

Irichohalticella tirathabae Ferriere 1933b: 87 F. JAVA (BMNH no. 5-301) (examined) add (Misspelt by Ferriere as *Irichohaltichella tirathabae*)

Diagnostic features: Head moderately stout; genae converging; adorbital groove shallow; clypeus not produced. Thorax as in normal Hybothoracini; scutellum dorsally almost flat, its apex produced posteriorly as in figure 173; propodeum horizontal in middle along submedian carinae, sides posteriorly lowered with distinct corners. Gaster broadly sessile; first and second tergites fused. Basal tergite with two submedian carinae; length of each carina distinctly more than two times width between them; apex of gaster in female acuminate; in male sixth tergite with strong dorsal tooth on tubercle.

Host: Parasite of *Apanteles* in moth *Tirathaba rufivina* Walker (Pyralidae).

Distribution: Java, Sri Lanka, Philippines and Sumatra.

Material examined: Primary types.

21. Genus NIPPONCHALCIDIA Habu

Nipponochalcidia Habu 1976: 22-23. Type-species: *Euchalcidia kajimurai* Habu, by original designation.

This genus is present in Japan and China and is included in this monograph to avoid confusion if it is later found in Oriental Region. Recently I have come across a species of this genus from Shanghai (China). The basal tergites are not fused in the type-species but according to Boucek(1988)the basal two tergites are fused in Australian species. Diagnostic characters are mentioned in the key to genera in this monograph. The genus is very close to *Proconura* and *Nearretocera* but *Proconura* differs in lacking the basal transverse carina on first tergite. *Nearretocera* can be separated as given in the key to genera of this monograph.

22. Genus IRICHOHALTICELLA Cameron

(Fig. 174)

Irichohalticella Cameron 1912: 637-638. Type-species: *Irichohalticella pilosella* Cameron by monotypy.

I have examined the lectotype male (BMNH no.5-300) which has the following important characters : Black; legs reddish; antenna with first funicular segment longer than second; clypeus protruding as a semicircular or subtriangular lobe in front and over mouth; first gastral tergite with numerous longitudinal striae (Fig. 174); hind margin of second tergite deeply emarginate.

This is an extralimital genus which I include here to avoid confusion if it is found in Oriental Region in future. The members of

this genus are probably parasites of Pyralidae. The genus is distributed in Australia and in Papua New Guinea.

23. Genus *INVREIA* Masi

(Figs. 175-184 441,442)

Invreia Masi 1927 : 210-211. Type-species: *Invreia subaenea* Masi, by original designation.

The known synonyms are: *Euchalcidia* Masi (1927 with type-species *Euchalcidia elegantula* Masi, designated by Boucek, 1952), *Peltochalcidia* Steffan (1948) and *Parinvreia* Steffan (1951a). Boucek (1988) synonymised *Hyperchalcidia* Steffan (1951b) with *Invreia* but I have studied this genus *Hyperchalcidia* in depth and found it to be a synonym of *Psilochalcis* Kieffer. *Euchalcidia* became a synonym of *Invreia* after its type-species was relegated to the latter genus by Steffan (1976). The Oriental species of *Euchalcidia* now belong to the genus *Proconura* Dodd and Girault. *Invreia* (in the present sense in this paper) has a simple proximal tooth on hind femur and not a massive one with grooves on it as found in *Psilochalcis*. Members of this genus are parasites of Lepidoptera pupae. *Invreia* is distributed in Asia, Europe, Africa, North and Central America.

KEY TO ORIENTAL SPECIES OF *INVREIA* MASI (FEMALES ONLY)

1. Clypeus produced forwards into a roof-like projection (Figs. 175-177) which covers part of labrum.....2
- Clypeus not prolonged as in alternate.....3
2. Clypeus strongly projecting as a semicircular piece (Fig. 175); frontogenal sulcus weakly carinate; accessory carinae of propodeum fully developed; stigmal vein not very distinct; antenna as in figure 176.....*ANUPAMA* sp. nov.

- Clypeus (Fig.177) smaller, triangular shaped; frontogenal sulcus well carinate, only proximal half of propodeal accessory carinae distinct; stigmal vein about half length of marginal; antennae as in figure 178.....ADHARA sp.nov.
 - 3. Apex of scutellum emarginate (Fig.180); outer femoral disc with faint reticulation; accessorial propodeal carinae indistinct; antenna as in figure 179.....HAYATI sp.nov.
 - Apex of scutellum not as above, other features partly or completely different.....4
 - 4. Antenna (Fig.181) long, slender, third segment at least 2.5x as long as wide, often still longer; last segment of funicle (preceeding the club) 1.65-1.67x as long as wide; eyes often ciliated; interstices between close pits of thoracic notum more or less shagreened; length 2.4 to 3.2mm.....SUBARMATA (Foer.)
 - Characters partly or completely different from above5
 - 5. Antenna (Fig. 182) short; segments of funicle transverse; about 1.5x longer than wide; club as long as three preceeding segments together; length 3.2 to 4mm.....LIGUSTICA Masi
 - Antenna not as above.....6
 - 6. Antenna (Fig.183) with club a little longer than three preceeding segments together; propodeal accessorial carinae not well developed.....CRASSICORNIS (Masi)
 - Antenna (Fig. 184) with club shorter than or subequal to two preceeding segments, propodeal accessorial carinae well developedGHANII Habu
- Unplaced in the key for want of details :

1. *Invreia erythropus* (Cameron) (Female unknown)

1. *Invreia anupama* sp. nov.

(Figs. 175,176,441,442)

Female: Length 2.98 mm. Black; scape, pedicel, ring segment, fore femora, mid femora, fore tibiae, mid tibiae, hind tibiae, trochanters,

hind tarsi and tegulae reddish brown; antennal segments four to tip of club liver brown; eyes yellowish grey; hind femora reddish brown with a black round patch in outer middle portion extending to dorsal middle region. Pubescence white. Wings hyaline. Head a little wider than thorax; relative measurement of POL: 37, OOL: 10; clypeus projecting as a semicircular piece (Fig. 175). Antenna (Fig. 176) with scape not reaching front ocellus; frontogenal sulcus weakly carinate; temples not narrow. Thorax with distinct round pits on notum; interstices much wider than diameter of pits in most parts; smooth and shiny; mesepisternum with fore coxal depression prolonged into tooth-like flange ventrally; apex of scutellum rounded; propodeum with complete equally developed submedian, accessory, sublateral and lateral carinae, posteriolateral margin not quite angulate. Forewing with stigmal not quite distinct. Middle femur spindle shaped; hind coxa without a basodorsal tooth; hind femur (Fig. 441) moderately pubescent with long and short hairs, outer ventral margin with comb-like teeth; hind femur length 1.3x its width. Gaster (Fig. 442) distinctly shorter than thorax (15:20), dorsal disc distinctly pitted, pits close; second tergite shagreened on dorsobasal half, sides covered with sparse regularly placed setae, each surrounded at base by 'petal-like' arrangement of reticulation. Tergites three to six rugose and reticulate. Epipygium and ovipositor-sheath not visible from dorsal side.

Male : Unknown.

Holotype : F. INDIA, Kerala, Calicut Uni. Campus, Coll. Narendran, 19.ii.1986 (DZCU). *Paratypes*: 1 F. Tamil Nadu, Coimbatore, Sugarcane Breeding Institute, Coll. Narendran and party, 23.iv.1987 (DZCU).

Remarks : This species comes very close to the European *Invreia benoisti* (Steffan) but differs from it in having pedicel distinctly more than four times as long as wide, distinctly longer than fourth segment; preclava distinctly longer than twice its width; relative size of other segments differ from those of *benoisti* (Steffan).

2. *Invreia adhara* sp. nov.

(Figs. 177, 178)

Female : Length : 2.67—3.69 mm. Black; scape. except middle, pedicel, fore and mid legs, hind tarsi, and apex of hind tibia brown (the black colour often tends to become reddish or brownish at bases and apices of hind femora and on dorsal side of hind tibia in some forms and in some others the brownish colour tends to become blackish). Wings hyaline. Head width subequal to maximum width of thorax; relative measurement of POL :36, OOL:10; preorbital carina distinct on upper half; clypeus as in figure 177; frontogenal sulcus well carinate. Antenna (Fig. 178) with scape not quite reaching front ocellus. Thorax with distinct round pits, interstices wide; apex of scutellum rounded; mesepisternum with fore coxal depression not distinctly prolonged into a flange. Propodeum with complete equally developed submedian, sublateral and lateral carinae; accessory carinae distinct only on proximal half; median carina weakly developed but distinct; secondary transverse carinae distinctly developed; posteriolateral margin not forming angles; lateral teeth absent. Forewing with stigmal about half marginal, submarginal a trifle over 7x marginal. Hind coxa without a dorsobasal tooth or carinae; hind femora length 1.6x its width. Gaster distinctly shorter than thorax (37:24): first tergite closely pitted on disc, base with a deep pit; second tergite microsculptured on dorsal region at median basal half, shagreened at distal median region at median basal half, shagreened at distal median region with characteristic 'petal-like' reticulation on sides (as in *anupama*) posterior margin emarginate; third to fifth tergite with an irregular row of 'petal-like' pits on posterior margin; sixth tergite perpendicular; rugosopunctate; epipygium and ovipositor sheath not visible from dorsal side.

Male : Unknown.

Holotype: F. INDIA, Kerala, Calicut Uni.Campus, Coll. Narendran and Thresiamma, 19.vii. 1987 (DZCU). *Paratypes*: 17 F. same data as holotype except dates of collection from 1985—1987. 1 F. INDIA, Uttar Pradesh, Aligarh, Coll. M.Hayat, 25. vi. 1985 (DZCU)

3. *Invreia hayati* sp.nov.

(Figs. 179,180)

Female: Length 5mm. Black; scape, pedicel, ring segment, trochanters, bases and apices of femora, fore tibiae (except inner median part), apices and dorsal sides of hind tibiae, all tarsi and tegulae yellowish brown; eyes and ocelli pale yellowish grey; wings hyaline; veins brown; pubescence white. Head width 1.2x its length, wider than maximum width of thorax; eyes sparsely pubescent, a little over three times genal length in profile, 1.35x as long as wide; preorbital carinae faintly indicated on upper half of frons; scrobe almost reaching front ocellus; frontogenal sulcus partly carinate, becoming indistinct near eye; postorbital carinae indistinct; relative measurement of POL: 24, OOL: 7. Antenna (Fig.179) with scape not reaching front ocellus. Thorax with shallow round widely spaced pits; apex of scutellum slightly emarginate (Fig.180); mesepisternum prolonged into a tooth-like flange ventrally; propodeum with distinct submedian and sublateral carinae, accessorial carinae indistinct; lateral costae distinct; lateral teeth indistinct; posteriolateral corners not quite angulate. Forewing with stigmal extremely short. Hind coxa without a dorsal tooth; hind femora length 1.85x its width. Gaster a trifle shorter than thorax; first tergite smooth and shiny, not quite reaching middle of gaster, its posterior margin convex; second tergite smooth on basodorsal part, distal dorsal part faintly shagreened; lateral regions punctate and pubescent; sixth tergite shagreened and sparsely punctate; ovipositor sheath slightly visible from dorsal side.

Male: Length 2.33 mm, resembles female closely except in having stouter antenna, scape, without a tooth but with deeply concave at distal half.

Holotype: F. INDIA; Aligarh, Coll.M.Hayat, 24.vi.1984 (DZCU).
Paratype: M. INDIA: Karnataka, Coll.Unknown, date:11.iv.1981 (DZCU).

Remarks: This species does not fit to the key given by Nikolskaya (1960). It also differs from all other species in having a combination

of characters such as, emarginate apex of scutellum; outer hind femoral disc with reticulation that form large meshes; accessorial carinae of propodeum indistinct and interstices of thorax faintly but distinctly shagreened.

4. *Invreia subarmata* (Forster)

(Fig.181)

Halticella subarmata Forster 1856: 2, Lectotype F. GREECE, Creta (TMB).

The only known synonym of the species is *Halticella tarsalis* Forster. A good redescription of this species by Boucek (1951) and figures by Grissell (1981) are available for easy identification of the species. Though Roy & Farooqi (1984) doubtfully reported this species from India. I have not yet come across any specimen of this species from India. However through the kindness of Dr.Boucek, I could examine a pair of homotypes. The diagnostic features are : Head a trifle wider than its length; malar distance slightly shorter than eye height; interstices on thoracic notum less than diameter of pits: posteriolateral margins of propodeum right angled; submedian, accessorial and sublateral carinae distinct; lateral costae distinct, lateral teeth absent; hind femur 1.75x as long as its width. Gaster as long as thorax.

Host: Unknown

Distribution: Europe and India (?)

Material examined: 1F. and 1M. BOHEMIA, Coll.Boucek, 11.vii.1964, 26 vii. 1948.

5. *Invreia ligustica* Masi

(Fig.182)

Invreia ligustica Masi, 1927: 1934, Syntypes M.VARAZZE (LIGURIA) (MCSG)

This species is reported from India by Roy & Farooqi (1984) but I could not verify this report. Apart from the good original description, redescrptions are provided by Boucek (1951), Niko'skaya (1952, 1960) and Steffan (1951). The diagnostic features of the species are given in the key above.

Host: Unknown.

Distribution: Mediterranean countries, Europe and Asia.

Materials examined: Cotypes present in BMNH.

6. *Invreia crassicornis* (Masi)

(Fig. 183)

Euchalcidia crassicornis Masi 1929: 173, Lectotype F. INDIA, N. Bangal (ZSI) (examined)

Invreia menoni Roy & Farooqi 1984: 50, F. INDIA, Dehra Dun (IARI) (examined) **syn. nov.**

Boucek (1984) transferred this species to *Invreia*. I examined the syntypes (both male and female). The gaster has short carinae at base. The types are not in good condition. The holotype of *menoni* could be examined during my visit to IARI and I am unable to separate it from the type of *crassicornis* Masi. Diagnostic features are given in the key.

Host: Unknown.

Distribution: India.

Material examined: Primary types of *crassicornis* and *menoni*.

7. *Invreia ghanii* Habu

(Fig. 184)

Invreia ghanii Habu 1970:45, F. PAKISTAN (BMNH) (examined).

This is a distinct black species parasitising pupae of *Chilo partellus* a serious pest of Maize and Sorghum in the Indian subconti-

nent. The original description is more than enough for the identification of the species. The species can be separated from other Oriental species by the key given in this monograph.

Host: Chilo partellus Swinhoe (Pyralidae).

Distribution: W. Pakistan and India.

Materials examined: 1 F. INDIA, Karnataka, Bangalore, Coll. Clement Peter, 27.iii.1980. 1F. Andhra Pradesh, Hyderabad, September 1973.

8. *Invreia erythropus* (Cameron) comb. nov.

Halticella erythropus Cameron 1897:41, Lectotype M. here designated (BMNH no. Hym. 5-285b) (examined). (one antenna and one wing missing).

Since Cameron did not specify a holotype, I have selected a lectotype. (Cameron has put a label written in his own handwriting as '*Chalcis fulvicaudis*' which is only a manuscript name). This lectotype fit very well to the original description of Cameron.

Diagnostic features: Black; eyes pale yellowish, funicle, tegulae and legs ferruginous; pubescence white. Head a little wider than its length, subequal to width of thorax; scrobe reaching front ocellus; frons with pits confluent; frontogenal sulcus weakly carinate. Antennae with scape not at all reaching front ocellus, without a dent. POL 3x OOL. Thorax with close pits on notum; interstices as wide as or a trifle wider than diameter of pits on median part of mesoscutum, scapulae and scutellum; apex of scutellum weakly bilobed; mesepisternal flange distinct. Propodeum sloping with submedian and sublateral carinae distinct; lateral teeth weakly developed, posteriorolateral margin not forming angles. Gaster much shorter than thorax (27:17); first tergite smooth and shiny; second tergite with 'petal-like' pits except on dorsomedian portion near basal margin; sixth tergite rugosopunctate.

Female: Unknown.

Distribution: India.

Materials examined: Apart from the Lectotype two males, India, Kerala, Thekkedy, Coll. Narendran & Party, May 1986.

24. Genus **PSILOCHALCIS** Kieffer

(Figs. 185-188, 443, 444)

Psilochalcis Kieffer 1904:250-251; Type-species, *Psilochalcis longigena* Kieffer.

Hyperchalcidia Steffan 1951b:67. Type-species: *Hyperchalcidia soudanensis* Steffan; by original designation. **syn. nov.**

The other only known synonym is *Leptochalcis* Kieffer (1904). Dr.J.R.Steffan of Paris Museum sent a pair of paralectotype (F.&M.) to me. I also examined homotypes of *Hyperchalcidia soudanensis* Steffan, the type species of *Hyperchalcidia*. I am of the opinion that the genus *Hyperchalcidia* is the same as *Psilochalcis* and both cannot be separated on well defined characters. The genus *Psilochalcis* is extremely close to *Invreia* Masi from which it differs mainly in the nature of the proximal tooth of hind femur. In *Psilochalcis* the proximal tooth is characteristic as in figure 186 whereas in *Invreia* the proximal tooth is simple. All the other features separating *Psilochalcis* from *Invreia* are not tangible good characters to separate them. This genus is distributed in Madagascar, Africa and Oriental Regions.

KEY TO ORIENTAL SPECIES OF *PSILOCHALCIS* KIEFFER

1. Females 2
- Males 4
2. Head front view (Fig. 188) almost square with very short cheeks and oral margin very large.....**SUDANENSIS** (Stef.)
- Head in front view triangular (Fig. 186); mouth not large, narrow3
3. Lateral sides of fore coxa with several distinct rugae; frontogenal carina complete and distinct reaching ventral margin of eyes;

apex of scutellum slightly emarginate (Fig. 185); length of antennal club equal to preceeding one and one-third segments combined; third tergite of gaster half as long as that of second in dorsal view; hind femur rufous.....CARINIGENA (Cam.)

- Lateral side of fore coxa almost smooth with few weak incomplete rugae on lower part; frontogenal carina incomplete, not reaching eyes; apex of scutellum not emarginate (Fig. 444); length of club equal to preceeding two segments combined; third tergite of gaster only 0.25x as long as that of second in dorsal view; hind femur brownish black.....KERALENSIS sp. nov.

4. Head in front view almost square with very short cheeks and oral margin very large.....SOUDANENSIS (Stef.)

- Head in front view triangular. cheeks longer, oral margin narrower5

5. Apex of scutellum slightly emarginate; hind femora black; head and body densely pubescent; third tergite of gaster half as long as second in dorsal view.....CARINIGENA (Cam.)

- Apex of scutellum not emarginate; hind femora brownish black; head and body less densely pubescent than in alternate; third tergite of gaster 0.25x as long as second in dorsal view.....KERALENSIS sp. nov.

1. *Psilochalcis carinigena* (Cameron)

(Fig. 185)

Coelochalcis carinigena Cameron 1907b:579. Lectotype M. here designated) INDIA, Gujarat (BMNH no.5-251) (examined).

Invreia opisinae Narendran, 1985a:85, M. INDIA, Gujarat (DZCU) syn. nov.

Diagnostic features: *Female*: Length 2.9-4.54mm. Black; eyes greyish brown; trochanters, femora and tibiae brownish red; hind tibiae and tarsi brownish black; tegulae brown; wings subhyaline,

veins brown. Head slightly wider than its length; relative measurement of height of eye:27 (in profile), gena:20, POL:10, OOL:3.5; lower face densely pubescent; scrobe transversely rugulose, not reaching front ocellus; scape swollen at basal part; flagellum filiform; relative measurement of length of segment beginning with scape: 48,12,9,8,8,8,7,7,6,6.5 and 9 (club counted as one); pedicel 3.4x longer than wide. Thorax with punctures as in typical Hybothoracini; apex of scutellum slightly incised; propodeum with a distinct submedian and sublateral carinae; accessorial carinae distinct basally, each lateral margin with distinct two post-spiracular teeth; propodeum horizontal basally, subvertical apically; hind coxa without a dorsal tooth; hind femora with a large basal tooth as in figure 185. Gaster without basal carinae; first tergite shagreened on disc; sixth tergite and sides of gaster densely pubescent.

Male: Similar to female except in having stouter antennae with a small bent on scape; eyes sparsely pubescent. Head and body more densely pubescent than in female, reddish colour of femur and tibia becoming blackish.

Host: *Opisina arenosella* Walker (Oecophoridae)

Distribution: All over Indian subcontinent.

Materials examined: About 500 both male and female specimens from India (Kerala, Tamil Nadu, Karnataka, Andhra Pradesh, West Bengal, Delhi) and Sri Lanka,

Remarks: In the beginning I had difficulties in identifying the female of this species until I could examine innumerable specimens and make breeding experiments in the laboratory. I erroneously identified *opisinae* as a new species which is corrected here.

2. *Psilochalcis keralensis* sp. nov.

(Figs. 186, 187, 443, 444)

Very similar to *carinigena*. Hence only the differences are mentioned below.

Female: Length 2.55-3.15 mm. Antennae, all femora, tibiae and tarsi brownish black. Ratio of eye height to genal length in profile:45:31; relative measurement of POL:18, OOL:5.5; gena with less pubescence; frontogenal carina obliterated beneath eye, head and body less densely pubescent than in *carinigena*; scrobe nearly smooth on upper half; lower half transversely striated; antennae with scape swollen basally; ratio of length beginning with scape: 55,17,7,10,10,10,10,8,9,9,18. Thorax with punctures similar to *carinigena*; apex of scutellum (Fig. 444) straight, not at all emarginate or incised; hind femur (Fig.187) with sparse punctures and sparse pubescence; length of third tergite of gaster 0.25x as long as second tergite in dorsal view.

Male: Length 1.9-2.27mm. Male differs from female in having stouter antenna with subapically incised scape (antennal ratio of length from scape: 38,6,2,12,11,10,10,10,10,8,20) and in having denser pubescence on face and stronger punctures on thorax and gaster.

Holotype: F. INDIA, Kerala, Calicut Uni.Campus, Coll. Narendran and Party, 15.iv.1986 (DZCU). *Paratypes*: 1F. 1M. same data except date of collection, April 1987. 1F. 1M. same data except date, 28.iii.1987. 1M. 23.i.1986. 1M. 25.iii.1985.

Remarks: This species resembles *Psilochalcis longigena* Kieffer from Madagascar, but *longigena* differs from *keralensis* in having outer disc of hind femur with characteristic widely spaced, scattered and sparse minute pits, length of hind femur 1.73x its width; genal area with sparse but distinct pits with smooth interstices; in having relatively long genal area (longer than that of *carinigena* also).

3. *Psilochalcis soudanensis* (Steffan) comb. nov.

Hyperchalcidia soudanensis Steffan 1951b:4, F. SENEGAL (MNHN).

I examined a homotype of this species at USNM and found that it belongs to the genus *Psilochalcis* Kieffer. The original descriptions of the species also clearly shows that it is *Psilochalcis* Kieffer. The large proximal tooth of hind femur characteristic of

Psilochalcis is present in this species. I regard the almost square nature of the frontal region and the short gena are only of specific importance and not of generic value. A good description is given by Steffan (1951b).

25. Genus **PROCONURA** Dodd

(Figs. 189-194, 445-448)

Proconura Dodd in Girault 1915b:343. Type-species *Proconura politiventris* Dodd and Girault by original designation ('*Euchalcidia*' in sense of authors but not of the type species).

Neochalcidia Husain, Rauf and Kudeshia 1985:525. Type-species: *Neochalcidia longiclavata* Husain, Rauf and Kudeshia. **syn. nov.**

I could not examine the type-species of *Neochalcidia* since loan request did not materialise. From the description and drawings, it is almost possible to conclude that *Neochalcidia* is *Proconura* and one of the anelli there, is possibly a fake (in slide mounting it sometimes depends on right focusing and without this 'extra' anellus one can easily conclude that this is *Proconura*. In order to be sure I also wrote to Dr. Boucek concerning this identity and in his reply (Boucek, 1988, per. com) stated the same opinion as mentioned above.

The genus *Proconura* can be recognised by the presence of two carinae on either side of basal fovea on first gastral tergite. They can be relatively short or exceeding the fovea and they can be parallel or strongly convergent. The genus is distributed in Europe, Africa, Asia, Australia and Pacific Islands. They are mostly parasitic on Lepidoptera and one species on Coleoptera.

KEY TO ORIENTAL SPECIES OF *PROCONURA* DODD (FEMALES ONLY)

1. Gaster with basal carinae converging posteriorly (Figs. 190, 191)
.....2

- Gaster with basal carinae not as above.....4
- 2. First tergite of gaster distinctly punctate (Fig. 190).....3
 - First tergite of gaster smooth and shiny; interstices on thorax as in figure 193; wings hyaline; tegulae black; length 2.21-2.33 mm.....MINUSA sp. nov.
- 3. Posterior margin of second gastral tergite deeply emarginate (Fig.190); accessorial carinae and two lateral teeth of propodeum distinct: apex of scutellum slightly incised (Fig.189); punctures on scutellum close, interstices narrow; not wider than diameter of pits.....EMARGINATA R. & F.
- Posterior margin of second tergite of gaster (Fig. 191) not deeply emarginate as above, weakly concave; apex of scutellum rounded; propodeum with accessorial carinae absent with only one weak protuberance at sides..... ASIATICA sp. nov.
- 4. Gaster with basal carinae diverging posteriorly (Fig. 192); blackish species; first gastral tergite with distinct pits on disc; area between submedian and sublateral carinae reticulate,....PHILIPPINENSIS (Masi)
- Gaster with basal carinae not diverging posteriorly; other characters partly or completely different.....5
- 5. First gastral tergite (Fig.194) with distinct pits on disc; malar space not very shorter than eye.....CARYOBORI (Hanna)
- First gastral tergite without pits on disc, smooth and shiny, malar space distinctly shorter than eye.....ORIENTALIS (H, R., & K.)

1. *Proconura emarginata* (Roy & Farooqi)

(Figs. 189,190)

Euchalcidia emarginata Roy & Farooqi, 1984:42, F. INDIA, Delhi (IARI) (examined)

Neochalcidia longiclavata Husain, Rauf & Kudeshia, 1985 :525, M.
Aligarh (with Husain).

Apart from the holotype and paratype of *emarginata*, I have examined and studied innumerable specimens of both sexes of this species. The males fit quite well to the original description of *longiclavata* (except for the two 'anelli' see comments under the genus *Proconura*.)

This species is characterised by the posterior emarginate margin of second tergite in female; convergent basal carinae of gaster (Fig. 190) in male and female; propodeum with distinct submedian and sublateral carinae in male and female; lateral teeth of propodeum distinct in female. It comes extremely close to *Proconura yamamotoi* (Habu) (comb. nov.) and I am unable to separate the two on any clear-cut differences except that the emarginate nature of second tergite is more pronounced in *emarginata*. It is likely that *emarginata* may fall under synonymy with *yamamotoi* which can be confirmed only after further studies.

Host: Unknown.

Distribution: India (Kerala, Delhi, Aligarh).

Materials examined: Apart from the holotype and paratypes of *emarginata*: 201 F. 231 M. from different localities in Kerala Tamil Nadu and Uttar Pradesh have been examined.

2. *Proconura asiatica* sp. nov.

(Figs. 191, 445, 446)

Female: Length 3.09 mm. Black; apex of scape, fore legs, mid legs apex of hind tibia, dorsal region of hind tibia, apex of hind femur and all tarsi rusty-brown; tegulae dark brown; pubescence dirty white and brownish yellow on other parts. Head (Fig. 445) width (1.27x) its length, subequal to thorax; relative measurement of POL:22, OOL:6; vertex narrow; scrobe rugulose, not reaching front ocellus,

margins ecarinate, frons with distinct shallow pits; pubescence sparse; frontogenal sulcus weakly distinct on ventral half; weakly carinate. Antenna with scape almost reaching front ocellus, relative measurement of length of segments from scape onwards: 62, 22, 10, 11, 12, 11, 11, 10, 12, 10, 20. Thorax with a brownish yellow seta on each pit of notum. Propodeum with a distinct submedian and sublateral carinae, accessorial carinae absent; postspiracular teeth weakly developed; forewing with stigmal vein a trifle shorter than marginal. Hind femur (Fig.446) length 1.8x its width. Gaster a little shorter than thorax; basal carinae a little converging towards posteriorly (Fig. 191); second tergite smooth on dorsal median part, pitted and pubescent on sides, pits on lateral part of second tergite 'petal-like'; third to fifth tergite shagreened and pubescent; sixth tergite rugose and pubescent.

Male: Unknown.

Holotype: F. TAIWAN, Wu-feng, Coll. H. & M. Townes, 28. iii. 1983 (AEI)

Remarks: This comes near *Proconura yamamotoi* in general appearance but differs from it in having propodeum without median and secondary transverse carinae: in having different colour of hind tibiae and tegulae and in having gaster a little shorter than thorax.

3. *Proconura philippinensis* (Masi)

(Fig. 192)

Euchalcidia philippinensis. Masi, 1929:175. F. (Lectotype here designated) PHILIPPINES, Coernos, Mts. (USNM no. 41894) (examined)

Euchalcidia reticulata Roy & Farooqi 1984: 44, F. INDIA (IARI) (examined) *syn. nov.*

During my study stay at USNM I selected the lectotype F. since Masi did not select a holotype. The diverging basal carinae of gaster

and punctate disc of gaster are characteristic of this species. I examined the holotype of *reticulata* during a visit to IARI and I cannot separate it from *philippinensis* on any specific clear-cut characters. The description by Masi and the key given above are sufficient to identify the species.

Host: Unknown.

Distribution: India and Philippines.

Materials examined: Primary types of *philippinensis* and *reticulata*

4. *Proconura minusa* sp. nov.

(Figs. 193, 447, 448)

Female: Length 2.21-2.33mm. Black; apex of scape, pedicel, ring segment, bases and apices of fore femora, fore tibiae, bases and apices of mid femora, mid tibiae, apex of hind tibiae and all tarsi pale rusty brown. Eyes and ocelli blackish; tegulae deep black; wings hyaline. Head (Fig.447) 1.2x as wide as long, subequal to maximum width of thorax; relative measurement of POL : 20, OOL: 4; vertex not narrow; scrobe not reaching front ocellus; frons with pits somewhat contiguous; frontogenal sulcus not quite distinct; antenna with scape not reaching front ocellus. Relative measurements of length of antennal segments from scape onwards: 51, 27, 6, 8, 8, 8, 8.5, 9, 8, 8, 18. Thorax with shallow pits; interstices shagreened on pronotum and anterior part of mesoscutum; propodeum with all usual longitudinal carinae distinct except accessorial carinae which are distinct only on basal one-third part; transverse secondary carinae distinct; lateral teeth indistinct. Forewing with marginal about 3x stigmal; hind femur (Fig.448) length 1.75 its width. Gaster a little shorter than thorax; first tergite smooth and shiny with basal carinae converging posteriorly; second tergite smooth and shiny on dorsal margin, its posterior margin very slightly convex; third to sixth tergite rugose; epipygium and ovipositor sheath distinctly visible from dorsal side.

Male: Unknown.

Holotype : F. INDIA, Tamil Nadu, Coimbatore, Narendran and Thresiamma Varghese, 7.ix.1987 (DZCU). *Paratypes*: 1 F. N.BORNEO Coll. Ranau, 5.x.1958 (BBM).

5. *Proconura caryobori* (Hanna)

(Fig. 194)

Euchalcidia caryobori Hanna 1934: 474, F. SUDAN (BMNH) (examined)

Lasiochalcidia trisulia Mani & Dubey 1974: 13, F. NEPAL, Trisuli (USNM) (examined) *syn.nov.*

Peltochalcidia Indica Mani & Dubey 1974: 17, F. INDIA, Kerala, Cardamom hills (USNM) (examined) *syn.nov.*

Euchalcidia ricini Roy & Farooqi 1984: 44, F. INDIA, Delhi (IARI) (examined) *syn.nov.*

This is a widely distributed species in India. It can be easily confused with *emarginata* but can be separated by the key given above. I have examined the holotypes of *indica* and *trisulia* and found them to be *caryobori* (Hanna). The very slightly convex clypeus of *indica* often met with as a variation in this species. The basal carinae of gaster is (Fig.194) is distinct in *indica*. *P. ricini* is certainly *caryobori* (Hanna) and I do not find any specific difference between the two.

Host : *Caryoborus pallidus* (Olivier) (Col.Bruchidae).

Distribution : India, Africa.

Materials examined : Besides the primary types of *caryobori*, *indica* and *ricini* : 7F. INDIA, Kerala, Narendran & party 1985-1987. 1 F. Tamil Nadu, Coimbatore, Narendran & Party, 27.ix.1987. 10 F. INDIA, W. Bengal, Salt Lake area, S.K.Gupta, 1982. 83 M. from Kerala, Uttar Pradesh, Tamil Nadu and W.Bengal examined.

6. *Proconura orientalis* (Husain, Rauf and Kudeshia)

Euchalcidia orientalis Husain, Rauf and Kudeshia, 1985:529, F. INDIA, Aligarh (ZDAMU)

I could not examine the holotype of this species inspite of my efforts. Requests for loan of types remained unanswered. Dr.M.Hayat was kind enough to send me three specimens of *Proconura* collected from the same locality of the type of *orientalis*. These specimens fitted to the original description of (though the description is inadequate) *orientalis*. In the original description of *orientalis* the authors did not specify whether the basal gastral carinae are converging or parallel. They also did not state whether posterior margin of second tergite is emarginate. In the specimens sent by Hayat, basal carinae are not converging posteriorly (they are parallel) and posterior margin of second tergite is not deeply emarginate. I have considered these specimens here as *orientalis*.

Host : Unknown.

Distribution : India (Uttar Pradesh, Kerala, West Bengal)

Materials examined : 3 F. INDIA, Uttar Pradesh, Aligarh, Coll. M.Hayat, 18.iii. 1984., 30.x.1983. 6 F. W. Bengal Salt Lake area, S.K.Gupla, 1982. 1 F. Kerala, Malampuzha, Narendran and Party, 16.i.1986. 1 F. Nilambur, Narendran & Party, 2.viii. 1987.

26. Genus **INDOINVREIA** Roy and Farooqi (Figs. 195-197)

Indoinvrea Roy & Farooqi, 1984 : 46, Type-species: *Indoinvrea bouceki* Roy and Farooqi.

Diagnostic features: Head thin; eyes protruding; genae elongated; frontogenal sulcus distinct; antennae with micropilar area below club; apex of scutellum rounded or bidentate. Gaster without carinae at base. This genus is found in India only.

KEY TO ORIENTAL SPECIES OF *INDOINVREIA* ROY AND FAROOQI

1. Scutellum with distinct dents at apex; hind femur length about twice its width; gaster more than twice as long as broad; antenna as in figures 195 and 196.....**BOUCEKI** R.& F.

- Scutellum without dents at apex, only slightly emarginate; hind femur length more than twice its width, gaster about twice as long as broad; female antenna as in figure 197.....
.....MENONI R. & F.

1. *Indoinvrea bouceki* Roy and Farooqi

(Figs. 195, 196)

Indoinvrea bouceki Roy & Farooqi 1984: 47, F. INDIA Delhi (IARI)
(examined)

There is some discrepancy in the original description of the species. While the name '*bouceki*' has been misspelt as '*boucekia*' in the key given by the authors, it is also mentioned that head is as long as broad, in the key for '*bouceki*' (where as in the description it is mentioned that head is broader than long). I examined the holotype and found that head is broader than long and the original name given in the label is '*bouceki*'. The other diagnostic characters of the species can be made out from the original description which I have checked with the holotype.

Host : Unknown.

Distribution : India.

Materials examined : Holotype and paratype.

2. *Indoinvrea menoni* Roy & Farooqi

(Fig. 197)

Indoinvrea menoni Roy & Farooqi 1984:48, F. INDIA, Delhi (IARI)
(examined)

This species is very close to *bouceki* and differs from *bouceki* only by the characters mentioned in the key above. In specimens from Kerala base of hind femur is testaceous which in one specimen extends to middle.

Host: Unknown.

Distribution: India (Delhi, Kerala, W. Bengal & Tamil Nadu)

Materials examined: Besides holotype and paratypes; 2F. INDIA, Kerala, Kallai, Narendran & party, June 1987. 1 F. INDIA, W. Bengal, Salt Lake area, May 1982. 1 F. INDIA, Tamil Nadu, Siruvani, Narendran & party, 26. ix. 1987. 1F. INDIA, Kerala, Calicut Uni. Campus, Narendran June 1987.

27. Genus **LASIOCHALCIDIA** Masi

(Figs. 198-208)

Lasiochalcidia Masi, 1927: 220-221. Type-species: *Oxycoryphus pilosellus* Cameron (designated by Steffan, 1951 and Boucek, 1951).

The known synonyms are *Oxycoryphus* (typographical error for *Oxycoryphus*), *Dromochalcidia* Masi (1929), *Oxycoryphiscus* Chesquiere (1946) and *Anoplochalcidia* Steffan (1951a).

Masi (1927) did not designate the type-species of *Lasiochalcidia* when he proposed the genus, based on three species viz. *Euchalcis rubripes* Kieffer, *Euchalcis tenuicornis* (Fonscolombe) and *Euchalcis dargelasi* (Latreille). With regard to the type species there is some controversy. While Nikol'skaya (1952) and Habu (1960) considered *Euchalcis rubripes* Kieffer as the type-species, Steffan and Boucek considered *Oxycoryphus pilosellus* Cameron as type-species. While Cameron as well as Kieffer published the description of these species in the same year 1904, the question can be settled after knowing clearly the priority in publication of these two papers. Available evidence suggests Cameron's paper is older than that of Kieffer. Hence in this paper I consider the opinion of Steffan (1951) and Boucek (1951) valid.

Diagnostic features; Vertex above in anterior-posterior direction, very thin so that temples almost lacking; posterior margin of

pronotum with a border of minute white bristles ; apex of scutellum with two distinct dents; propodeum strongly sloping; frons covered with dense silvery bristles; scape of male often with a dent below.

This genus is distributed in Africa, Europe and Asia. Most species of this genus are parasites of Myrmeleonidae.

KEY TO ORIENTAL SPECIES OF *LASIOCHALCIDIA* MASI

1. Females2
- Males 5

2. Hind femora (Fig.200) distinctly less than 2x as long as wide; distal half not narrower than proximal (equal or subequal) half; apex of scutellum well emarginate (Fig.199); scrobal striations as in figure 198.....**PILOSELLA** (Cam.)
- Hind femora distinctly more than 2x as long as wide; distal half a trifle narrower than proximal half; other characters partly or completely different.....3

3. Apex of scutellum prominently bilobate; hind femora black (Fig.202); propodeum as in figure 201.....**MOLUCCENSIS** (Masi)
- Apex of scutellum weakly emarginate; hind femora usually red ..
..... 4

4. Striations of scrobe (Fig. 203) almost straight ; apex of scutellum as in figure 205; propodeum with lateral teeth weak; antennae and legs completely rufous.....**THRESIAE** sp.nov.
- Striations of scrobe (Fig. 207) not as above; apex of scutellum as in figure 208; propodeum with prominent lateral teeth; antennae, fore and mid femora and hind tibiae usually blackish.....**DARGELASHI** (Lat.)

5. Apex of scutellum deeply or well incised and bilobate.....6
 — Apex of scutellum hardly emarginate, almost entire.....
 DARGELASII (Lat.)
- 6 Hind leg black.....BIRMANUS (M.&D.)
 — Hind leg red.....PILOSELLA (Cam.)

1. *Lasiochalcidia pilosella* (Cameron)

(Figs. 198-200)

Oxycoryphus pilosellus Cameron 1904:109 .Lectotype M. BORNEO (BMNH-no.5-303a) (examined).

Lasiochalcidia mysorensis Mani & Dubey 1974: 15, F. INDIA, Bangalore-Mysore Road (USNM-no. 76227) (examined) **syn.nov.**

The known synonyms are: *Euchalcis trichiocephala* Cameron (1907) and *Euchalcis myrmeleoneae* Mani (1936).

The holotype of *mysorensis* is in poor condition with one hind leg, one antenna and wings of one side missing. The lectotype male of *pilosellus* is in good condition. I am unable to separate *mysorensis* from *pilosella* on any definite specific characters.

Diagnostic features: Black; antennae often liver colour; legs yellowish brown or rufous (often red tends to become black in some specimens); scape of male with a large dent; temples extremely narrow; apex of scutellum of female as in figure 199. In male it is not as deeply incised as that of female; frons and gena densely pubescent. Thorax densely pitted, interstices smooth and ecarinate; first tergite of gaster smooth and shiny.

Host Myrmeleontidae.

Distribution : India.

Materials examined: Apart from the primary types of *pilosella*, *trichiocephala*, *myrmeleoneae* and *mysorensis* the following specimens have also been examined: 1F. INDIA, Karnataka, Mysore, Narendran

and party, 30.vii.1987 (DZCU) . 1F. 2M., Kerala, Nilambur, Narendran, 5.vi.1980, 2.v. 1985. 1F. INDIA, Kerala, Calicut, Narendran, 7.viii.1985. 1F. Kerala, Chelari, Narendran, 10.x.1985. 1F. Calicut University Campus, 5.iii.1985. 4F. and 4M. Narendran and party, 1985-1987. 1 F. Nilambur, V.V.S.Kumar, 5. iv.1979. 1M. and 1 F. INDIA, Pondicherry, Karikal, P.S.Nathan, 2.x.1962. 1 M. Tamil Nadu, Coimbatore, P.S.Nathan, iv.1962. 1 M. INDIA Hariyana, Shabhad, K.E. Gibson 30.vii. 1968.

2. *Lasiochalcidia moluccensis* (Masi)

(Figs. 201, 202)

Dromochalcidia moluccensis Masi, 1929: 185, Lectotype: F. SUMATRA (DEI).

A good description with figures are given by Masi. Diagnostic features: *Female*: Length 5mm. Black; scape, pedicel, fourth to sixth segments of antenna, tegulae and hind coxae brownish red. Relative measurements of length of antenna from scape onwards: 112.5, 25, 20, 15, 15, 15, 14, 13, 12, 11, 25; apex of scutellum prominently bilobate. Propodeum as in figure 201. Hind femur as in figure 202. Gaster a trifle shorter than thorax or subequal to thorax.

Host : Unknown.

Distribution : Sumatra.

Materials examined : Known from the type only.

3. *Lasiochalcidia thresiae* sp.nov.

(Figs. 203-206)

Female : Length 5.1mm. Black; antennae, legs and tegulae brownish red; basal and lateral parts of gaster partly red. Pubescence silvery. Head (Fig.204) width subequal to thorax; temples lacking (Fig.204); relative measurement of POL : 10, OOL: 2. Lower half of frons, gena and post gena densely pubescent; frontogenal sulcus carinate. Antenna with scape not reaching front ocellus; relative

measurements of lengths of segments from scape onwards, 77,22,15, 14, 16, 13.5, 11, 12, 11, 10, 20. Thorax convex, pronotum distinctly convex at middle region, its posterior margin with a dense row of short pubescence; punctures on notum close, interstices smooth, narrow; apex of scutellum as in figure 205. Propodeum with distinct submedian and sublateral carinae; lateral costae distinct; lateral teeth distinct but weak; wings hyaline; hind femur (Fig.206) length a trifle less than twice its maximum width. Gaster shorter than maximum width of thorax, somewhat oval, first tergite smooth; second to fifth tergite smooth dorsally but punctate and moderately pubescent laterally; sixth tergite rugosopunctate and moderately pubescent laterally; ovipositor sheath slightly protruding.

Male : Unknown.

Holotype : F. JAVA, Djakarta, Bay Island, Coll.J.V.d.Vecht. 19.vii.1953 (RNHL).

4. *Lasiochalcidia dargelasii* (Latreille)

(Figs. 207, 208)

Chalcis dargelasii Latreille 1805: 4 (Type, Type locality and depository unknown).

The known synonyms are: *Chalcis tenuicornis* Fonscolombe (1832), *Chalcis denticornis* Fonscolombe (1832), *Halticella tuberculata* Forster (1856), *Euchalcis dargelasii* Dufour (1861), *Lasiochalcidia rubripes* Erdos (1946) and *Lasiochalcidia tenuicornis* Boucek (1949). Diagnostic features : *Female* : Length 4.5-6mm. Black; anterior and middle tarsi, tibiae, hind coxae and hind femora red. Often hind coxae tends to become more blackish; hind tibiae and tarsi brownish or brownish black. Head as in figure 207. Antennae with scape almost reaching front ocellus; pedicel about five times as long as wide; club about as long as two preceeding segments together. Thorax with apex of scutellum as in figure 208. Propodeum with lateral teeth distinct. Gaster length equal to length of thorax; first tergite smooth

and shiny; second tergite smooth on median dorsal part; punctate on sides; sixth tergite sparsely punctate.

Male : Length 4.5-5.5mm. Differs from female in having shorter and stouter antennae with scape dentate, colour more blackish.

Host : Unknown.

Distribution : Europe, India(?)

Materials examined : 1 F. CZECHOSLOVAKIA, Slovakia Chotes, Igt. Dr. Padr, 22. vi. 1960, 1 M. BULGARIA, Sandaki, Igt., Ckocoura vi. 1967 (both determined by Z. Boucek).

Remarks : This European species is included here because it has been reported from India by Roy and Farooqi (1984). However it needs scrutiny and comparison of specimens before conclusively stating whether this species exists in Oriental Region. My redescription of the species given above is based on the materials identified by Boucek (Details under 'Materials examined').

5. *Lasiochalcidia birmanus* (Mani & Dubey)

Euchalcis birmanus : Mani & Dubey 1973:23, M. BURMA, Rangoon (USNM) (examined).

This species comes near *L. nigra* (Yas.) in general appearance but differs from it in having deeply incised apex of scutellum; scrobe almost reaching front ocellus; dent on scape more pronounced. First tergite of gaster faintly shagreened.

Host : Unknown.

Distribution : Burma.

Material examined : Holotype.

28. Genus NEOHYBOTHORAX Nikolskaya

(Fig. 209)

Neohybothorax Nikolskaya, 1960: 228. Type-species: *Hockeria hetera* Walker by original designation.

This genus is characterised by the posterior corners of propodeum produced posteriorly (Fig. 209) as in *Hybothorax* (extralimital) in having frons not as bulging as that of *Hybothorax*, antennal scape reaching front ocellus, comb of teeth of outer ventral margin of hind femur much longer than in *Hybothorax* and hind leg claws differ in shape. I erroneously reported this genus from India (1986a) and otherwise I have no knowledge of this genus which is European and African in origin, existing in India or in other parts of the Orient except for a report by Mani (1976) of the species *Neohybothorax hetera* under the generic name *Hybothorax*. For the same reason I have included this genus and species (*hetera*) in this Monograph in order to avoid confusion if this is found here later.

1. *Neohybothorax hetera* (Walker)

(Fig. 209)

Hybothorax hetera Walker, 1834: F. ? Europe ? (HDEO)?

I examined two specimens identified as this species during my stay at BMNH. Apart from the generic characters given above diagnostic features are: *Female*: Length: 3.4-4.5mm. Black; legs except coxae reddish yellow (in some cases hind femora darker). Antennae with scape as long as segments four to eight combined; pedicel 1.5x length of preceeding segments. Apex of scutellum rounded; propodeum as in figure 209; hind femur length 2.4x its width. Gaster shorter than thorax, strikingly pointed.

Male : Length: 3.4-4mm. Similar to female except in having a little more blackish colour on legs; antennae shorter than in female, scape not reaching front ocellus; gaster shorter, posteriorly rounded.

Host : Unknown.

Distribution : Mediterranean, Europe and India (?).

Materials examined : Two specimens present in BMNH in 1980.

29. Genus *SMICROMORPHA* Girault

(Figs. 210, 211, 449, 450)

Smicromorpha Girault 1913a: 89, Type-species: *Smicromorpha doddi* Girault by original designation and monotypic.

The only known synonym of this genus is *Smicromorphella* Girault (1930). This genus belongs to an interesting subfamily Smicromorphinae. This subfamily was casually mentioned by Schmitz. (1946) but I formally elevated it to the subfamily status (Narendran, 1979, 1984, 1985b, 1986a) which was later substantiated by Naumann (1986) who published an excellent paper on the revision of Indo-Australian Smicromorphinae. The genus *Smicromorpha* has an elongate tail-like petiole and gaster inserted high on propodem. *Smicromorpha doddi* Girault and *S. keralensis* Narendran are parasitic on *Oecophylla smaragdina* Fabricius. Dr. Naumann in one of his personal correspondence (1987) informed me that he has a female specimen belonging to an undescribed genus of Smicromorphinae from Singapore. According to him this has a sharp carina separating the dorsal and posterior surfaces of head, delicate mesoscutal and scutellar microsculptures and a simple hind tibia. The genus *Smicromorpha* is found in Africa (Nigeria), India, New Guinea and Australia. For a detailed study of Smicromorphinae, students of this group should refer to the revisionary paper by Naumann (1986).

1. *Smicromorpha keralensis* Narendran

(Figs. 210, 211, 449, 450)

Smicromorpha keralensis Narendran 1979 : 908, M. INDIA, Kerala Tenjipalam (BMNH).

There is some differences about the colouration of this species between my original description and the redescription provided by Naumann (1986). This is because postmortum changes occurred after I described the species. I made the original description of the species based on fresh material soon after killing the specimen and before any postmortum changes took place. The mesonotum was not more extensively black (as pointed out by Naumann, 1986, P. 179) than I indicated in figure 4 of my original description in the fresh specimen. This change (postmortum change) occurred only later.

Female : I have seen a female specimen collected by Dr.J.S. Noyes from Coimbatore present at BMNH which I believe is the female of *keralensis*. This differs from male in having epipygium divided medially into two, cercus short, sternal plates 3-5 emarginate and posterior margins of tergites two and six straight.

Host : I observed the male type specimen flying around the nest of *Oecophylla smaragdina* Fabricius. Examination of this nest of *Oecophylla* showed a peculiar orange coloured hymenopterous larvae inside. Unfortunately my efforts to rear them did not succeed. I assume that this golden coloured larvae may be those of *S. keralensis*.

Distribution : India (Kerala, Tamil Nadu).

Materials examined : Apart from the type, 1 F. Coimbatore, collected by J.S. Noyes, 1979.

30. Genus **CHALCIS** Fabricius

(Figs. 212-216, 451- 453)

Chalcis Fabricius 1787: 201. Type-species: *Chalcis sispes* (Linnaeus)
Sphex sispes Linnaeus, designated by Westwood 1839.

The name *Smiera* Spinola (1811) and *Smicra* Spinola (unjustified emendation) are known synonyms of this genus. The various problems concerning the name *Chalcis* and designation of type-species have been elaborately dealt by Boucek (1988). Some members of this genus are known to be parasitic on larvae of Stratiomyiidae (Diptera)

in Europe and N. America. The genus is distributed in America, Europe, Africa, Asia and Australia.

KEY TO ORIENTAL SPECIES OF *CHALCIS* FABRICIUS

1. Hind femur without inner basal tooth; first tooth of outer ventral margin of hind femur shortest; gaster including petiole distinctly longer than thorax; postmarginal vein shorter than marginal; black species.....**EDENTATA** sp.nov.
- Hind femur with an inner basal tooth; first tooth of outer ventral margin of hind femur not shortest, much larger; gaster including petiole length subequal to length of thorax; postmarginal hardly longer than marginal; not completely black species.....**GIBSONI** Narendran

1. *Chalcis edentata* sp. nov.

(Figs. 212—215)

Female: Length 4.54—4.72 mm. Black; eyes whitish yellow; all tarsi testaceous; apices of fore and mid femora, bases and apices of fore and mid tibiae testaceous; fore wing with brownish tinge. Head as in figure 212, a little less wider than thorax, surface shallowly and irregularly pitted. Area below scrobe irregularly carinate; relative measurements of POL:20, OOL:12; pre and postorbital carinae indistinct; frontogenal sulcus hardly distinct. Antennae (Fig. 213) with scape distinctly exceeding front ocellus. Thorax closely pitted, interstices narrow and carinate, moderately pubescent: anterior dorsal carinae of pronotum weakly represented; apex of scutellum entire, propodeum with distinct median carina, other parts irregularly carinate, lateral teeth absent. Forewing with relative proportion of veins: submarginal: 76, marginal: 36, postmarginal: 30, and stigmal: 7. Hind coxa elongate, apex exceeding beyond base of gaster; hind femur (Fig. 214) densely and minutely punctate on outer side, without an inner basal tooth, outer ventral margin with 17 teeth, basal first tooth shortest. Gaster (Fig. 215) including petiole distinctly longer than thorax (81:73); petiole a little longer than half of gaster

with one smaller and weak tubercle-like projection on anterior one-fifth with setae on sides; smooth and shiny on dorsal side, first gastral tergite smooth and shiny; second and third smooth and shiny with long spurs and pubescence on sides; sixth tergite smooth and shiny; faintly shagreened with moderately long pubescence and very few scattered pits.

Male: Unknown.

Holotype: F. TAIWAN, Wushe, Coll.H. Townes, 26.iv.1983, (AEI) *Paratypes*: 3F. of same data of holotype.

Remarks: This species comes close to *Chalcis fukuharai* Habu (1960) in having generally black colour all over head and body but differs from *C. fukuharai* in having no inner basal tooth on hind femur, in having first tooth of outer ventral margin of hind femur shortest, in having gaster including petiole distinctly very longer than thorax; frontogenal sulcus almost indistinct or hardly indicated and in having length of scape distinctly longer than combined length of segments four to six.

2. *Chalcis gibsoni* Narendran

(Figs. 216, 451–453)

Chalcis gibsoni Narendran 1987a : 7–9. F. INDIA, Coimbatore (BSRI)

This species has been described in detail in my original description. In that paper a printing mistake crept in, stating 'hind coxae exceeding apex of gaster' which should be read as hind coxae exceeding base of gaster. The hind femur (Fig. 452) (not hind coxa as mentioned in the original description by printing error) outer side densely, minutely, faintly punctate, moderately pubescent, inner side with large, sharp tooth near base, outer ventral margin with 19 teeth, basal first tooth largest and sharp.

Host: Unknown.

Distribution : India (Kerala, Coimbatore, Jeypore), Java (new record) and Nepal.

Materials examined : Besides holotype and paratypes, 1F. 1M, INDIA, Kerala, Parambikulam, K. Mohandas, 29.v.1986, 1F. Bogor, Collector Unknown, 8.x. 1959.

31. Genus **SPILOCHALCIS** Thompson

(Figs. 217, 218)

Spilochalcis Thompson 1875: 15. Type—species: *Chalcis xanthostigma* Dalman by monotypy.

The known synonyms are: *Diplodontia* Ashmead (1888) *Eustypiura* Ashmead (1904a), *Enneasmicra* Ashmead (1904a), *Octosmicra* Ashmead (1904a), *Heptasmicra* Ashmead (1904a), *Hexasmicra* Ashmead (1904a), *Pentasmicra* Ashmead (1904a), *Tetrasmicra* Ashmead (1904a), *Trismicra* Ashmead (1904a), and *Spilosmicra* Cameron (1909).

This genus closely resembles *Chalcis* Fabricius from which it can be separated by characters given in the key to genera given in this monograph. This genus is found in Americas, Africa, Asia and in Europe. Members of this genus are parasites of pupae of Lepidoptera, Coleoptera, Hymenoptera and rarely Diptera (Burks 1940)

1. **Spilochalcis xanthostigma** (Dalman)

(Figs. 217, 218)

Chalcis xanthostigma Dalman 1820: 141. SWEDEN, Smolandia, Vestrogothia (NRS).

Spilochalcis simlaensis Cameron 1902: 438. Lectotype F. INDIA, Simla (BMMH—no. 5—217) (examined) **syn. nov.**

Spilochalcis indica Mani 1935: 252—253, F. Shillong (ZSI no. 892/H3), (examined) **syn. nov.**

Spilochalcis fletcheri Mani 1936: 340, F. INDIA, Shillong (IARI)
syn. nov.

I examined the primary type of *simlaensis* and *indica* and found to be the same as *xanthostigma* (Homotype examined). Same is the case of *fletcheri* (Homotype examined). These species are separated mainly on slight colour variations and slight size differences.

Several authors have redescribed this species. Among the available description of the species, the one by Boucek (1951) and Habu (1960) are good for easy identification. The main diagnostic features are: scape not reaching front ocellus; frontogenal sulcus distinct; pits on pronotum, mesoscutum and scutellum close and interstices coalesce; scutellum slightly wider than long, weakly longitudinally depressed, apicolateral margin reflexed, apex somewhat pointed in dorsal aspect. Forewing with marginal vein one-third to two-fifth as long as submarginal vein, often interrupted from submarginal; postmarginal a little longer than marginal; stigmal one-third as long as marginal. Hind coxae reaching posterior margin of tergite one; apex of hind femur (Fig. 217) extending beyond apex of gaster, inner ventral side with a tooth at base; gaster (Fig. 218) as long as or a little shorter than thorax.

Host: *Hylotoma* (= *Arge*) and *Arge metallica* Linn. (Argidae) in Europe Walker, 1834; *Coleophora laricella* Hubner (Coleophoridae) in North America (Habu, 1960).

Distribution: Europe, Asia and North America.

Materials examined: Besides primary types of *indica* and *simlaensis* the homotypes of *xanthostigma* and *fletcheri*.

2. *Spilochalcis nigrorufa* (Walker)

Smicra nigrorufa Walker 1852:47, F. INDIA? (BMNH).

According to Dr. Boucek (1980. per. comm.) this species is probably misreported from India. It is probably an African species.

Diagnostic features: Antennal scape slightly touching or hardly touching front ocellus; antennal insertions at level or slightly above level of ventral margin of compound eyes; frontogenal sulcus distinct; right mandible with three teeth; mesoscutum and scapulae with sparse pits and interstices broad and shiny; colour almost similar to *xanthostigma* but the rufous patches are a little more larger and occupying relatively larger areas.

Host: Unknown.

Distribution: India? and Africa.

Material examined: One specimen at BMNH in 1980.

32. Genus MEGACHALCIS Cameron

(Figs. 219-224, 457)

Megachalcis Cameron 1903: 96-97. Type-species: *Megachalcis fumipennis* Cameron, by monotypy.

The known synonyms are: *Allocentrus* Cameron (1911) and *Macrochalcis* Masi (1944).

Members of this genus are apparently parasites of woodboring beetles. They are distributed in South Asia from Western India to Eastern Indonesia.

KEY TO ORIENTAL SPECIES OF MEGACHALCIS CAMERON

1. Hind femur with an inner basal tooth; propodeum and body as in figures 219 and 220.....MALABARICA sp.nov.
- Hind femur without an inner basal tooth; other features partly or completely different.....2
2. Apex of scutellum (postscutellum) arcuate; basal areoles of propodeum of uniform size and apical cells not interrupted by median carina (Fig. 222) except at extreme ends; pronotum always with two convex areas.....3

- Apex of scutellum projecting angularly; basal areoles not as above but as in figure 224; pronotum not always with two prominent convex areas (humps).....5
- 3. Wings uniformly infumate; pronotal convex areas very well developed; first gastral tergite smooth; length of female 9-10mm (excluding ovipositor sheath).....**FUMIPENNIS** Cameron
- Wings hyaline; pronotal convex areas not well developed as in alternate first gastral tergite sparsely pitted.....4
- 4. Body unusually pubescent, much larger than in alternate with a longer ovipositor (body 16 mm with ovipositor 26 mm); propodeum with a median tooth (Timor, Indonesia-extralimital).....**TIMORENSIS** Boucek
- Body not unusually pubescent; not as large as in alternate, with shorter body (7 mm without ovipositor); propodeum without a median tooth.....**SECUNDARIA** (Masi)
- 5. Forewing uniformly infumated; pronotal convex humps less developed than in alternate; scapulae and axillae moderately convex; propodeum with proximal dent more robust than distal dent; hind tibia unpolished, maty, hollow depression with a number of almost contiguous pits; antenna black.....**HIRTICEPS** (Cameron)
- Forewing greatly infuscated at base than at apex; pronotal humps well developed; propodeal distal dent more robust than proximal; hind tibia shiny, hollow depression with minute pits sparse....**CARINATA** (Steffan)

1. *Megachalcis malabarica* sp.nov.

(Figs. 219, 220)

Female: Length (including ovipositor) 6.39-8.58 mm. Black; fore and mid legs and hind tarsi black with a liver brown mixed; pronotal side flange, tegulae and basal tergite of gaster reddish; wings hyaline with brownish tinge; veins dark brown. Pubescence silvery. Head width 1.33x its length; distinctly wider than thorax; pubescence

on frons and genae dense; scrobe reaches front ocellus; between apex of scrobe and front ocellus a triangular pubescent area present; frontogenal sulcus carinate; preorbital carina absent. Antenna with scape not reaching front ocellus. Thorax with pronotal humps on sides not very distinct but only very slightly indicated; median basal part of collar with dense minute silvery pubescence; posterior part of pronotum emarginate; pits on thorax large on most parts; not umbilicate but deep, each pit with a seta, interstices narrow, well carinate. Forewing with relative measurement of veins: submarginal: 63, marginal:18, postmarginal:31, stigmal:10. Hind coxa without a dorsobasal tooth; hind femur with a distinct inner basal tooth, outer ventral margin with a row of 9-10 irregular teeth; hind tibia with a deep smooth, lengthy fovea as in figure 219 on inner side. Propodeum as in figure 220. Gaster sessile, a little longer than thorax.

Holotype: F. INDIA, Kerala, Calicut University Campus, Narendran and party, 10.vii.1986 (DZCU). *Paratypes*: F. same data of holotype except date 17.viii.1986. 2F. MALAYSIA, Negris, Pasoh. For.Res. P.&M. Baker, 19.i.1979 and 5.ii.1979 (AEI).

2. *Megachalcis fumipennis* Cameron (Figs. 221, 222)

Megachalcis fumipennis Cameron 1903: 96-97, F. INDIA (HDEO) (examined)

The known synonym is *Macrochalcis bischoffi* Masi (1944). Diagnostic features: *Female*: Length: 9-10 mm (excluding ovipositor sheath). Black; tegulae, fore and midlegs liver brownish black (except coxae); hind tibia black with base liver brownish black slightly; eyes yellow without cilia; wings uniformly infumated. Frons with dirty white pubescence; clypeus smooth; distal margin of labrum with a fringe of dirty brown hairs; preorbital carinae indistinct; postorbital carinae distinct, running upwards; hind femur length twice its width; apex of scutellum somewhat rounded or entire; pronotal humps well developed as in figure 221. Propodeum as in figure 222.

Host: Unknown.

Distribution: Borneo (Kalimantan), India.

Materials examined: 1F. INDIA, Himalayas, Joseph, 1965 (BMNH)

3. *Megachalcis carinata* (Steffan)

(Figs. 223, 224, 457)

Allocentrus carinatus Steffan 1950:599, F. (MNHN).

Diagnostic features: Apex of scrobe separated from front ocellus; lamella (Fig. 223) separates extremities of scapes; hind femur width half of its length; propodeum (Fig. 224) with apical cells interrupted by median carina.

Host: Unknown.

Distribution: Vietnam (Tonkin).

Materials examined: Known from types only.

4. *Megachalcis secundaria* (Masi)

Macrochalcis secundaria Masi 1944:139, F. BURMA (ZMHU).

Diagnostic features; *Female*: Length: 6.5 mm. excluding ovipositor sheath+3mm ovipositor sheath. Black; gaster one-third basally red, antennae fuscous, pedicel brownish red; tegulae ferruginous. Wings hyaline. Relative measurement of marginal:100, postmarginal: 170, stigmal:34. Gaster with first tergite pitted sparsely. More densely pubescent than in *fumipennis* Cameron.

Host: Unknown.

Distribution: Burma.

Materials examined: Known from type only.

5. *Megachalcis hirticeps* (Cameron)

Allocentrus hirticeps Cameron 1911: 12. Lectotype F. BORNEO (BMNH. no. 5-118) (examined).

Diagnostic features: *Female*: Length 7 mm (excluding ovipositor sheath). Differs from *fumipennis* in having the following: first tergite of gaster reddish at base; metanotum below apex of scutellum pointed and projected posteriorly; pronotal humps far less prominent than in *fumipennis*; hind femur much swollen, not as long as that of *fumipennis*; frons more densely pubescent; gaster not much acuminate.

Host: Unknown.

Distribution: Borneo (Kalimantan).

Material examined: Lectotype only.

6. *Megachalcis timorensis* Boucek

Megachalcis timorensis Boucek 1988:67 F. INDONESIA, Timor (BMNH).

This is an extralimital species. I include it here because that it may be found in the neighbouring areas of Oriental Region. It comes near *secundaria* and *fumipennis* but can be separated by using the key to species given above.

Host: Unknown.

Distribution: Indonesia (Timor).

Materials examined: Known from the type only.

33. Genus **CRATOCENTRUS** Cameron (Figs. 225, 226)

Cratocentrus Cameron 1907a:215. Type-species, *Cratocentrus ruficornis* Cameron, by original designation.

The known synonyms are: *Cerachalcis* Masi (1944) and *Lepidochalcis* Nikolskaya 1952.

The genus can be separated from *Megachalcis* by the characters mentioned in the key to genera in this Monograph. The genus is distributed in Africa and Asia as far as Thailand.

KEY TO ORIENTAL SPECIES OF *CRATOCENTRUS* CAMERON

1. Hind femora and tibiae liver brownish red; postmarginal vein almost 2x the marginal: length of female 9-9.5 mm (excluding ovipositor sheath).....**TOMENTOSUS** (Nikolskaya)
- Hind femora blackish; postmarginal subequal to marginal; length of female 11 mm (excluding ovipositor sheath).....**BIRMANUS** (Masi)

1. *Cratocentrus tomentosus* (Nikolskaya)

(Fig. 225)

Lepidochalcis tomentosa Nikolskaya 1952: 44:91 SSSR (ZIASL)

Diagnostic features: Female: Length 9-9.5mm (excluding ovipositor sheath). Black; pronotum, fore and mid femora and tibia mostly liver brownish red; hind femur and tibia liver brownish red; first gastral tergite, sides of second tergite, epipygium and ovipositor sheath (except apex) liver brownish red. Silvery pubescence especially dense on frons, anterior declivity of pronotum, sides of thorax, median segment, hind femur and gastral tergite. Head wider than long; occiput concave; preorbital carinae indistinct due to long dense pubescence; postorbital carinae present; POL raised; antennae filiform, scape approximately half length of funicle; pedicel almost of same length of first funicular segment but narrower, ring segment visible; funicular segments slightly longer than wide; club slightly longer than last funicular segment. Thorax with pronotum convex, of same length of mesoscutum; punctures close, interstices narrow and hump like; notaulices with dense pubescence, indistinct on posterior part; scutellum slightly convex, apex slightly projecting forward; hind coxa without tooth on dorsal side; hind femur

with outer ventral margin with a row of 10-12 teeth (inner basal tooth of femur could not be observed since the femur was closely attached to the femur in the single specimen studied); hind tibiae with a long fovea inside on distal half; forewing with postmarginal almost twice length of marginal; stigmal about half marginal. Gaster elongately oval, all tergites deeply punctate, interstices rugose, dense pubescence on second and third tergite, fourth tergite forked posteriorly; length of ovipositor approximately twice length of hind tibia.

Male Length :7mm. Colour; antanna slightly shorter; tip of gaster, apex of femur, tibia and tarsus dark brown; apex of scrobe with a raised carina; last gastral tergite conically elongated; gastral tergites with silvery pubescence not localised as in female.

Material examined: 1F. INDIA, Gujarat, Deesa Col. C. G. Nurse (BMNH), 1M. of same data. of female.

Remarks: The above description is mainly based on short taxonomic notes prepared from the specimens present in BMNH during my study stay at BMNH and partly based on the description by Nikolskaya (1952).

2. *Cratocentrus birmanus* (Masi)

(Fig. 226)

Cerachalcis birmana Masi 1944: 135-136, F. BURMA (MCSG).

A good description is provided by Masi (1944). Diagnostic features: *Female*: 11 mm (excluding length of 3.5 mm of ovipositor sheath); scutellum semicircular in profile; postmarginal subequal to marginal; first tergite of gaster punctate; last two tergites as in figure 226; length of ovipositor sheath less than half of rest of body length.

Host: Unknown.

Distribution: Burma.

Material examined: Known from the type only.

34. TRIGONURA Sichel

(Figs. 227- 250, 454-456, 458, 459)

Trigonura Sichel 1865: 376-377 (as subgenus of *Phasgonophora* Westwood). Type-species: *Phasgonophora (Trigonura) crassicauda* Sichel by monotypy.

Known synonyms are: *Chalcidellia* Girault (1924), *Bactrochalcis* Kieffer (1912), *Centrochalcis* Cameron (1913), *Centrochalcidia* Gahan & Fagan (1923) and *Urochalcis* Nikolskaya (1952). Members of this genus are parasites of wood boring beetles. They are found in Americas, Asia, Africa and Australian regions.

KEY TO ORIENTAL SPECIES OF *TRIGONURA* SICHEL

(Partly modified from Narendran, 1987b)

1. Scutellum highly vaulted and convex (Figs. 227, 229, 231) 2
 2
- Scutellum not as above 4
2. Gaster (Fig. 228) subglobose; length of epipygium subequal to half median length of sixth tergite of gaster; first tergite not emarginate at posterior margin; thoracic notum orange brown with varying black patches STEFFANI Narendran
- Gaster acuminate and oval (Figs. 230, 232), length of epipygium longer than above, subequal to median length of sixth gastral tergite; other characters or combination of characters not as above 3
 3
3. First gastral tergite well emarginate posteriorly; hind femur yellowish red with a distinct yellow spot at apex; hind tibia rusty

- red with base black; thoracic notum rusty red with black patches on scapulae..... **INDICA** Narendran
- First gastral tergite slightly emarginate or not emarginate; hind tibia and femur completely black; thoracic notum rufous without any black patch **LUZONENSIS** Narendran
4. Epipygium and ovipositor sheath very long (Figs. 235, 236, 237, 239, 250), both longer than first gastral tergite 5
- Epipygium and ovipositor sheath short (Figs. 247, 249) 9
5. Frons with dense golden pubescence on middle region of parascrobal space (Fig. 233); posterior margin of pronotum with thick pubescence (Fig. 234) on sides; apex of scutellum semirectangular (Fig. 234) **GLADIATOR** (Walker)
- Frons and pronotum not as above; scutellum not as above 6
6. Epipygium extends to near the tip of ovipositor sheath (Fig. 237, 250); first tergite of gaster with microsculptures 7
- Epipygium extends about half of ovipositor sheath (Fig. 236); first gastral tergite smooth on dorsal side **TENUICAUDIS** (Waterston)
7. Thoracic notum, sixth tergite and ovipositor sheath black; gastral tergites second to fifth distinctly emarginate posteriorly 8
- Thoracic notum rufous with black patches; sixth tergite, epipygium and ovipositor sheath rufous **RUFICAUDIS** (Cam.)
8. Apex of scutellum rounded, first gastral tergite with microsculptures **BAKERI** Masi
- Apex of scutellum (Fig. 238) subsquare, first gastral tergite smooth **NISHIDAI** sp. nov.
9. Head and body predominantly black; propodeum with very strong and robust tooth on lateral side to each spiracle; forewing with brown infuscation adjoining the stigmal vein

- (Fig. 241), antenna (Fig. 240) with scape swollen at apex; OOL one-third POL; frons convex when viewed from side
SAMARENSIS Narendran
- Pronotum, mesoscutum, part of metanotum and part of propodeum rufous; sides of gastral tergites brownish; hind coxa and tibiae liver brownish black; propodeal tooth near spiracle less robust and smaller than in the alternate; if thorax and head black completely then gaster red on proximal half of first tergite10
10. Pronotum, mesoscutum and part of metanotum and part of propodeum rufous (Fig.243); antenna stout (Fig.242); metanotum not projecting posteriorly.....JAVENSIS Narendran
- Not as above, characters partly or completely different.....11
11. Gaster (Fig.247) subglobose; relative measurements of sixth tergite, epipygium and ovipositor sheath when measured from dorsal side in the following proportions:8:5:1; length of thorax a trifle less than 1.2x length of gaster; gaster completely rufousTOWNESI sp. nov.
- Gaster acuminate (Fig. 249); relative measurements of sixth tergite, epipygium and ovipositor sheath: 9:5:4. Thorax 1.06x length of gaster; gaster distal half black, basal half rufous SHONIMA sp. nov.

1. *Trigonura steffani* Narendran

(Figs. 227,228)

Trigonura steffani Narendran 1987b: 280-281, F., INDIA, C.U. Campus (DZCU).

Diagnostic features: *Female*: Length: 3.98 -5.5mm. Head width 1.4x its length, subequal to width of thorax; scrobe reaches front ocellus; relative measurement of POL:11, OOL:3. Antenna with scape length less than combined length of funicular segments four to six. Thorax convex (Fig. 227); forewing with postmarginal one-third marginal. Gaster (Fig. 228) a little longer than thorax,

Host: Unknown.

Ditribution: India (Kerala, Tamil Nadu)

Material examined: Holotype and paratypes

Remarks: For further details the original description must be referred.

2. *Trigonura indica* Narendran

(Figs. 229, 230)

Trigonura indica Narendran 1987b: 282, F., INDIA, Karnataka, Bangalore (DZCU).

Diagnostic features: Female: Length 5.17—7mm. Head width a trifle over 1.4x its length; relative mesasurement of POL: 10, OOL: 4; antenna with scape reaching front ocellus, length a little less than combined length of segments four to six. Thoracic notum as in figure 229; gaster (Fig. 230) distinctly longer than thorax.

Host: Unknown.

Distribution: India (Karnataka), Singapore.

Materials examined: Holotype and paratypes.

Remarks: For further details the original description must be referred.

3. *Trigonura luzonensis* Narendran

(Figs. 231, 232)

Trigonura luzonensis Narendran 1987b: 288 F., PHILIPPINES, Luzon (USNM)

Main Diagnostic features: Length: 7mm. Head width a little over 1.4x its length; relative measurement of POL:16, OOL:6.5; antenna with scape reaching front ocellus; thorax as in figure 231. Forewing with marginal a little more than 3x postmarginal. Gaster (Fig.232) distinctly longer than thorax.

Host: Unknown.

Distribution: Philippines, India.

Remarks: For further details the original description (Narendran, 1987) must be referred.

4. *Trigonura gladiator* (Walker)

(Figs. 233—235)

Haltichella gladiator Walker, 1862:360, F. SARAWAK (BMNH no. 5-424) (examined).

Diagnostic features: Head (Fig.233) a trifle wider than thorax; POL about 3x OOL. Thorax as in figure 234 with characteristic dense pubescence on sides of posterior margin of pronotum. Gaster (Fig.235) excluding epipygium and ovipositor sheath, shorter than thorax when measured from dorsal side. The colour of gaster varies from red to liver-brown or to black.

Host: Unknown.

Distribution: Sarawak, Borneo (Kalimantan), Malaysia (new record).

Materials examined Primary type; 2F., 1 M., BORNEO, Sandak C.F. Baker, 1927. 7F, MALAYSIA, Negris, P. & M. Baker 1978.

Remarks: For further details a reference to my paper (Narendran, 1987) must be made.

5. *Trigonura tenuicaudis* Waterston

(Fig.236)

Trigonura tenuicaudis Waterston 1922: 12-14, F. INDIA, Dehra Dun (BMNH no.5-111) (examined).

Waterston (1922) gave excellent description of this species. Mani and Dubey 1973 added a brief note to it. The first gastral tergite

is smooth on dorsal side. Otherwise the description by Waterston is good enough to identify this species.

Hosts: *Chrysobothris* (Buprestidae) and probably also *Gleonea* (Cerambycidae) and also *Ozotomerus maculosus* Per. (Anthribidae).

Material examined: Holotype F.

6. *Trigonura bakeri* Masi

(Fig. 237)

Trigonura Bakeri Masi 1926: 21. F. PHILIPPINES, Basilan (USNM-41768) (examined).

Since Masi's description is fairly good enough to recognise this species, I give below a few additional features which I noted during my study stay at the USNM. Thoracic notum not vaulted as in *T. indica* or *T. luzonensis*; apex of scutellum rounded; first gastral tergum with microsculptures; second to fifth emarginate posteriorly. The species can be separated from other Oriental species using the key given above.

Host: Unknown.

Distribution: Philippines

Material examined: Holotype n o. 41768 USNM.

7. *Trigonura nishidai* sp. nov.

(Figs. 238 239, 454-456)

Female: Length 12:1mm. Black; gastral tergite one to five and hind tibiae rufous; four and mid tibiae and tarsi reddish brown. Wings with a slight brownish tinge; veins dark. Head a little wider than maximum width of thorax from dorsal side; 1.5x its length; pubescence moderately dense; antennae inserted at or a trifle below level of ventral margin of compound eyes, scrobe reaching front ocellus; relative measurements of POL:27, OOL: 15. Thorax with close pits, interstices narrow and slightly hump-like; forewing with postmarginal

length subequal to stigmal or a trifle shorter than stigmal, RS-cross vein and RS-vein strongly indicated. Propodeum with lateral teeth distinct; first tergite of gaster (Fig.239) smooth, tergite 2 to 4 with a single row of pits and pubescence on dorsal side; fifth tergite with two rows of pits dorsolaterally; sixth tergite with shallow scattered pits, interstices smooth, broader than diameter of pits. Epipygium with distinct close pits upto area of cercus, beyond cercus rugosely and shallowly pitted.

Holotype F. LAOS, Ban Van Lue, J.L. Grissitt 13-15.iv.1965 (BBM).

8. *Trigonura samarensis* Narendran

(Figs. 240, 241)

Trigonura samarensis Narendran 1987b:289, F. PHILIPPINES, Samar Island (USNM).

Diagnostic features: Head width a trifle over 1.2x its length, wider than thorax; frons very convex; POL 3x OOL; thorax with close pits with interstices hump-like; scutellum not vaulted or convex; propodeum with strong tooth lateral to each spiracle. Gaster a little shorter than thorax.

Host: Unknown.

Distribution: Philippines, India, Taiwan (new record)

Material examined: Holotype and Paratype; 3F. TAIWAN, P & M. Baker, 1979.

Remarks: For further details the original description should be consulted.

9. *Trigonura javensis* Narendran

(Figs. 242-244)

Trigonura javensis Narendran 1987b: 286-287, F. JAVA (USNM)

Diagnostic features: Head width a trifle over 1.4x its length, wider than thorax; POL 3x OOL; Mesoscutum not greatly convex; scutellum not vaulted (Fig. 243); Gaster (Fig. 244) a trifle shorter than thorax with basal tergite, completely smooth and shiny.

Host: indetermined wood-borers.

Distribution: Java.

Material examined: Holotype and paratype.

Remarks: For further details, the original description should be consulted.

10. *Trigonura townesi* sp. nov

(Figs. 245-247, 458, 459)

Female: Length 3.32-3.41 mm. Black; gaster completely rufous. Fore and mid tibiae and all tarsi testaceous; bases and apices of fore and mid femora and tegulae testaceous, eyes pale yellow. Forewing with brownish tinge. Head width 1.25x its length, subequal to width of thorax; closely pitted; anterior margin of clypeus not distinctly raised or separated from frons (with vague carina); antennae inserted slightly above level of ventral margin of compound eyes; inter-antennal projection slightly wider than one antennal socket; lateral margins of scrobes somewhat carinate, reaches front ocellus; relative measurement of POL:17, OOL:10, antenna (Fig. 245) with scape reaches front ocellus. Thorax with posterior margin of pronotum greatly emarginate, not greatly convex as in *steffani*; scutellum (Fig. 246) not vaulted, apex as in figure 246; pits on thoracic notum close and pits hump-like forewing with relative measurements of veins: Postmarginal: 10, submarginal:93, marginal:26 and stigmal:7. Hind femur 1.49x as long as wide, with close pits and smooth interstices on outer disc, outer ventral margin with eight to nine teeth; propodeum with distinct prespiracular teeth; submedian, accessorial and sublateral carinae irregular but distinct, areolae not granulated. Gaster (Fig. 247) distinctly shorter than thorax (66:78), subglobose; first gastral tergite smooth and shiny with posterior margin straight; tergite 3 to 5

smooth with sparse pubescence on sides; sixth tergite with four rows of distinct close pits, interstices smooth and shiny.

Male: Length 3.38 mm. Similar to female in almost all features.

Holotype: F. MALAYSIA, Negris. P & M Baker, 3.v.1978 (AEI)

Paratypes: 1F. 1M. same data of holotype except date of collection 26.v.1978, 16.v.1978.

11. *Trigonura shonima* sp. nov.

(Figs. 248, 249)

Female: Length: 3.72-4.54 mm. Black: eyes greyish yellow; tegulae testaceous; bases and apices of fore and mid femora and tibiae testaceous; all tarsi testaceous; first gastral tergite completely and second tergite partly rufous. Forewings hyaline with brownish short pubescence. Head width 1.34x its length, distinctly wider than thorax, closely pitted; antenna (Fig.248) inserted at level of ventral margin of eyes, scape reaching front ocellus; interantennal projection a little wider than one antennal socket; lateral margins of scrobe carinate; scrobe reaches front ocellus; POL about 3x OOL. Thorax similar to that of *towensi*; apex of scutellum rounded; relative measurements of forewing veins: Postmarginal: 10, marginal: 27, submarginal: 92, stigmal: 9.5. Hind femur length 1.47x its width, outer ventral margin with nine irregular teeth. Propodeum as in *towensi* but areolae granulated. Gaster (Fig.249) a trifle shorter than thorax (82:85); first tergite smooth and shiny, posterior margin slightly emarginate, second tergite smooth and shiny with basal margin of sides with a single row of pubescence and microsculptures, posterior margin emarginate; third to fifth tergite smooth with a single row of pubescence on basal region on dorsal lateral parts with microsculptures on sides; sixth tergite with 3-4 rows of sparse shallow pits, interstices faintly shagreened.

Male: Unknown.

Holotype: F. MALAYSIA, Negris, Coll.P.& M.Baker, 26.vi.1979 (AEI). *Paratypes*: 3F, same data as for holotype except for date of collection; 26.ix.1978, 8.iv.1978, 4.iv.1978.

Remarks: This comes very close to *towensi* in general appearance but differs from *towensi* in having acuminate gaster, anterior margin of clypeus with a distinct margin, posterior margin of first tergite of gaster emarginate; antennae inserted at level of ventral margin of eyes, propodeal areolae granulated and coxae not as narrower towards apical parts as those of *towensi*.

12. *Trigonura ruficaudis* (Cameron)

(Fig. 250)

Centrochalcis ruficaudis Cameron 1913:2, Lectotype F. INDIA, Dehradun (BMNH type no.5-117) (examined).

This species is redescribed by Waterston (1922) and Narendran (1987b). The lectotype has its face with dense pubescence and first gastral tergite with sparse pits on dorsal side. However in specimens from Java the frontal pubescence is found to be less dense than that of the type.

Hosts: *Chrysobothris* (Buprestidae), probably also *Gleonea* sp. *Derolus discicollis* Gah. and *Diorthus simplex* White (Cerambycidae *Prosopis spicigera*? (Prosopidae; Mani & Dubey, 1973)

Distribution: India, Bangladesh, Sri Lanka, Pakistan and Java.

Material examined: Apart from the lectotype, 9 F. JAVA, L.G.E. Kalshoven, 3.ix.1932. and v,1932. 1M. of same data except date 11.ii.1932.

35. Genus *TRIGONURELLA* Boucek

(Fig. 251, 252)

Trigonurella Boucek 1988:64. Type-species: *Trigonurella elegans* Boucek

In my revision of Oriental *Trigonura* Sichel (Narendran (1987b) I had come across this genus which I thought only a species group. The genus is extremely close to *Trigonura* but differs in

having area below antennal sockets strongly raised X shaped structure; parascrobal areas flat, antenna of female moderately clavate; propodeum distinctly tapering caudad; lateral teeth sharp; gaster fusiform in female; hind femora with proximal tooth of outer ventral margin large. For comparison with other genera see key to genera. Probably parasitic on wood-boring beetles. Found in South East Asia, New Guinea and Australia.

1. *Trigonurella achterbergi* (Narendran)

(Figs. 251, 252)

Trigonura achterbergi Narendran 1987b:284-286, F. INDONESIA, Sulawesi (RNHL)

Diagnostic features: Female: Length 3.69 - 5.06 mm. Black; tarsi, bases and apices of fore and mid tibiae brownish. Pubescence silvery, moderately dense on frons, ventral side of coxae and outer side of hind femora. Head (Fig. 251) wider than thorax, densely punctured down to sides of X shape; pre and postorbital carinae present; frontogenal sulcus absent; genotemporal furrow not distinctly marked; interantennal projection broad with characteristic microsculptures; POL:9, OOL:4. Antenna (Fig. 252) moderately clavate. Thorax deeply pitted on notum, interstices carinate and raised as small humps in middle portions of pronotum and mesoscutum; mesoscutum convex towards anterior side as in figure 252. Propodeum deeply pitted, prespiracular lateral teeth strongly developed; petiole indistinct; forewing as in figure 252. Hind femur with moderately dense pubescence which are relatively long, interstices smooth and shiny. Outer ventral margin of hind femur with a characteristic large basal tooth followed by a row of ten small teeth; no inner basal tooth on hind femur. Gaster as in figure 252; first tergite smooth, less than half of gaster; second to fifth tergite smooth and shiny on dorsal side with a single row of minute pits; sixth tergite with a distinct and deep pits with interstices smooth and shiny.

Male: Length 3.69mm. Similar to female; hind leg and distal half of antenna liver brown; antennae not swollen as in female.

Host: Unknown.

Distribution: Indonesia and Philippines.

Material examined: Holotype and paratypes.

36. Genus **MEGALOCOLUS** Kirby

(Figs. 253-272, 460)

Megalocolus Kirby 1883b: 54,61. Type-species: *Halticella ducator* Walker by original designation.

The known synonyms are: *Pentachalcis* Cameron (1908), *Hexachalcis* Cameron (1911) and *Megacolus* Cameron (1903-typographical error).

The genus closely resembles *Stenochalcis* Mazi with which it can be separated using the key to genera given in this monograph. The members of this genus are parasites of wood-boring beetles as are all members of Phasganophorini. They are rare forest dwellers (Boucek, 1988). They are found in Asia and Australian regions.

KEY TO ORIENTAL SPECIES OF *MEGALOCOLUS* KIRBY

1. Apex of scutellum weakly or strongly emarginate (Figs. 255, 259, 263, 264, 266) 2
- Apex of scutellum not at all emarginate, either entire or rounded 8
2. Mesoscutum and scutellum reddish orange, apex of scutellum weakly emarginate; median length of epipygium about half length of preceding part of gaster; comparatively smaller species....
..... **ERYTHRNOTUS** (Cameron)
- Mesocutum and scutellum not rufous, other features partly or completely different..... 3
3. Apex of scutellum (Fig.255) with a very narrow but distinct emargination; scutellum not convex (Fig.254); POL not raised; gastral tergites first, second and third smooth; fourth shagreened; fifth with two rows of smaller pits with interstices shagreened; median length of epipygium a trifle over 1.5x length of

- preceeding gaster; scutellum black with reddish tinge; length 8.56 mm.....**NOTUS** sp. nov.
- Apex of scutellum not as above (Figs.259, 264, 266); other characters partly or completely different, larger species.....4
4. Postmarginal vein very much shorter than stigmal; hind ocelli relatively in a raised position.....5
- Postmarginal vein subequal or equal to stigmal; ocelli not as raised as in the alternate.....6
5. Pro and mesopleura as in figure 257, mesopleura with a smooth area above; front ocellus in a large triangular area; antenna usually rufous.....**SIGNATOR** (Walker)
- Pro and masopleura as in fig. 260; a distinct pit above mesopleural depression present; front ocellus (Fig.258) in a subtriangular area than in alternate; antennae usually black..
.....**ENSATOR** (Walker)
6. Propodeum with lateral teeth or projection indistinct or absent; apex of scutellum as in fig.263; ovipositor sheath black except tip which is brown.....**SHONODARUS** sp. nov.
- Not as above, characters partly or completely different.....7
7. Interstices on scutellum (Fig.264) with striated carinae; propleura and mesopleura as in fig.268; scape without long white pubescence as in alternate; gaster partly or completely red....
.....**DUACTOR** (Walker)
- Interstices on scutellum (Fig.266) not striated but narrow and rough; pro and mesopleura as in fig.267; scape with long white hairs; gaster partly or completely black or red.....
.....**TENTATOR** (Walker)
8. Postmarginal vein distinctly longer than stigmal.....9
- Postmarginal vein shorter or equal to stigmal.....10
9. Epipygium longer than pre-epipygial part of gaster; hind femur five or six widely spaced teeth on ventral margin, approximately 2x as long as its median length.....**LANCEOLATOR** (Walker)

- Epipygium shorter than gaster (Fig.270); hind femur 1.81x as long as wide, ventral margin with about nine teeth.....
.....ANUPAMUS sp. nov.
- 10. Gaster black; epipygium longer than pre-epipygal part of gaster.....PROPERATOR (Waker)
- Gaster (similar to Fig.272) red; epipygium shorter than gaster
..... 11
- 11. Interstices on thorax smooth and shiny (Fig.271).....
.....PROCTOTUPERATOR (Walker)
- Interstices striated.....SHONODARUS sp. nov.

Note: Though the apex of scutellum of *shonodarus* is weakly emarginate, it can be mistaken as entire under certain magnifications and light and for the same reason the species has been shown in either alternates in the key above.

1. *Megalocolus notus* sp. nov.

(Figs.253-255)

Female: Length 8.5 mm, Black; tarsi, tegulae, bases and apices of fore and mid tibiae brown. Wings hyaline with brownish tinge, veins blackish brown. Pubescence whitish.

Head (Fig.253) a little wider than thorax; surface strongly pitted, interstices of pits carinate; relative measurement of POL:28, OOL:27; pre and postorbital carinae absent; interantennal projection thin, projecting forward; area below scrobe with faint median carina like space; frontogenal sulcus indistinct. Antenna with scape reaching front ocellus. Thorax with close pits on notum, interstices narrow, transverse, carinate; anterior angles of pronotum not angulate, carinae absent; mesoscutum distinctly wider than long; scutellum somewhat, flat, slightly sloping, apex distinctly emarginate (Fig.255) propodeum with a blunt tooth before each spiracle. Forewing as in fig 254. Hind femur without an inner basal tooth, outer ventral margin with a row of eight teeth; hind tibia with a curved spine at apex.

Gaster with first tergite smooth; epipygium distinctly pitted, interstices smooth.

Male: Unknown.

Holotype: F. MALAYSIA, Negros Or.Mt Canlaon, Coll.H.M. & D. Townes. 28.iv. 1953 (AEI.)

2. *Megalocolus erythronotus* (Cameron)

Pentachalcis erythronota Cameron, 1908: 152-153 M, MALAYSIA, Sarawak, Kuching (BMNH) (examined.)

The published synonyms are: *Hexachalcis rufomaculata* Cameron (1911) and *Megalocolus rufinotum* Girault (1927).

Diagnostic features: Black; mesonotum, scutellum, tegulae, knees, tarsi red. Wings hyaline with infuscation, veins blackish; head thorax and legs covered with white pubescence; hind coxa length 2.5x its width; posmarginal vein subequal to stigmal; ovipositor sheath longer than half length of gaster.

Host : Unknown.

Distribution : Malaysia, Australia

Material examined : Primary types of *erythronotus* and *rufomaculata*

3. *Megalocolus signator* (Walker)

(Figs. 256, 257)

Halticella signator Walker, 1862: 359 Lectotype F. JAVA (BMNH. (examined)

The following names were synonymised with *signator* by Steffan (1956): *Halticella motator* Walker (1962), *Megacolus apicipennis* Cameron (1903) and *Megacolus rufiventris* (part.) Cameron (1903).

Similar to *ensator* in almost all features except for character given in the key above. *Female* : Length 10-12.7mm Antennae as

long as thorax; gaster much longer than thorax. Propleura and mesopleura as in figure 257; front ocellus located in a broad triangular area as in figure 256.

Host : Unknown.

Distribution : Borneo (Sarawak), Java

Material examined : Primary types and 1 F. SANDAKAN, Coll. C.F. Baker, 1927.

4. *Megalocolus ensator* (Walker)

(Figs. 258-260)

Halticella ensator Walker, 1862: 357, Lectotype F. SARAWAK (BMNH) (examined).

Steffan (1956) synonymised *Halticella tentator* Walker and *Megacolus fulvipennis* Cameron with *ensator*. However I find certain specific differences between these three species which are treated as distinct species (*fulvipennis* is a new synonym of *Halticella proctotuperator* Walker) in this work. The apex of scutellum is quite different in all these three species along with other features.

The species *ensator* resembles *ducator* Walker in general appearance but differs from it in having collar without striations or carinae but with almost fairly distinct pits; interstices on mesoscutum smooth and shiny; teeth of ventral margin of hind femur more prominent than that of *ducator*, area just behind hind ocelli without longitudinal striations as in *ducator*.

Host : Unknown.

Distribution : Borneo, Malaysia

Materials examined : Primary types; 2F, MALAYSIA, Posh Forest Res. Negri S. 20.iv.1979, 5.xi. 1978, Coll. P. & M.Baker

5. *Megalocolus shonodarus* sp.nov.

(Figs.261-263)

Female : Length 4.12mm; Black; fore and mid legs testaceous hind tarsi and tegulae testaceous; gaster red with eppygium and ovipositor sheath black except brown tip. Wings hyaline with brownish tinge, veins brown. Pubescence dirty white. Head (Fig.261) a trifle wider than thorax, distinctly pitted; relative measurement of POL: 26, OOL: 22; both mandibles bidentate; POL not very much raised; frontogenal sulcus indistinct; gena a trifle over one-third height of eye in profile. Antennae as in figure 262. Thorax compactly and closely pitted, interstices striated strongly on mesoscutum and weakly on scutellum. Propodeum with distinct areolae, lateral teeth hardly visible. Forewing with postmarginal subequal to stigmal. Hind femur length a little over length of hind coxa, a little over 2x its width, moderately pubescent on outer side, outer ventral margin with five teeth. Gaster with pre-epipygial part a little shorter than thorax, 2x length of epipygium; first tergite more, than half length of pre-epipygial part of gaster, smooth, shiny, posterior margin not emarginate; second to fourth tergites smooth, shiny with a sparse row of minute pits on each tergite, their posterior margin not emarginate. Sixth tergite shagreened with very few sparse, shallow pits; epipygium punctured and pubescent.

Holotype : F. MALAYSIA. Negri S. Pasoh Forest Res. Coll. P. & M. Baker, 30.iv. 1980 (AEI).

6. *Megalocolus ducator* (Walker)

(Figs. 264, 265)

Halticella ducator Walker, 1862: 357-358, Lectotype F. INDONESIA, Amboina (BMNH-Hym. 5-421) (examined)

Main diagnostic features: *Female*: Length: 18-20mm. Black; first gastral tergite red, others reddish black except epipygium and ovipositor sheaths; radicle of antennae brown; fore and mid legs brownish black. Head with pre and postorbital carinae not

clearly demarcated; hind ocelli and front ocellus not on a raised region as in *signator* or *ensator*. Thorax with interstices striated and raised on collar, anterior part of mesoscutum and on scutellum; apex of scutellum as in figure 264. Forewing veins blackish brown, postmarginal relatively short. Pro and mesopleura as in figure 265.

Host : Unknown.

Distribution : Indonesia, Philippines

Material examined : Primary types; 4F. PHILIPPINES, C.F. Baker 1927.

7. *Megalocolus tentator* (walker)

(Figs. 266, 267)

Halticella tentator Walker, 1862:358, Lectotype F. SINGAPORE (BMNH) (examined).

Female: Length 12—13mm. Colour similar to that of *ducator*. Scrobe, ocelli, sculptures behind ocelli, mesoscutal sculptures similar to those of *ducatur*. Antennae with long pubescence on scape. Apex of scutellum, pro and mesopleura different from *ducator* and as in figures 266 and 267. Forewing with marginal half length of submarginal. Basal part of gaster fusiform.

Host : Unknown.

Distribution : Singapore, Philippines (new record), Malaysia (new record).

Materials examined : Primary types; 4F. PHILIPPINES, C.F. Baker, 1927. 2F. MALAYSIA, Pasoh For. Res.P. & M. Baker, 21.iii. 1979. 1F. PHILIPPINES, Pallawan, H.Townes 11×ii.1952

8. *Megalocolus lanceolator* (Walker)

Halticella lanceolator Walker, 1862 :362—363, Lectotype F. INDONESIA, Aru (HDEO).

Megacolus striolatus Cameron 1905a:97, Lectotype F. SARAWAK, Kuching (BMNH) (examined) **syn. nov.**

Female: Length: 8—13mm. Colour similar to *ducator*; a little slenderer and smaller than *ducator*; scutellum unarmed; veins less darker than that of *ducator* (often with a brownish line on marginal vein); striations on scutellum similar to those of *ducator*. I did not find any specific difference between *striolatus* and *lanceolator* (paralectotype examined).

Host: Unknown.

Distribution: Indonesia, Sarawak.

Materials examined: 1F. Lectotype of *striolatus*; 1F. paralectotype of *lanceolator* and 2F. MALAYSIA, Negris, P. & M. Baker, 1979.

9. *Megalocolus anupamus* sp. nov.

(Figs. 268—270, 460)

Female: Length: 5.54mm. Black; eyes and ocelli pale yellow; bases and apices of fore and mid tibiae and all tarsi yellowish brown; fore and mid coxae, fore and mid trochanters, median part of fore and mid femora and median part of fore and mid tibiae liver brown; first, second and third tergites of gaster reddish orange; wings hyaline with a brownish tinge, veins blackish brown; tegulae brownish yellow; pubescence whitish.

Head width 1.32x its length, subequal to maximum width of thorax, distinctly pitted; POL raised; front ocellus in a triangular pit; POL equal to OOL; longitudinal median carina or ridge below interantennal projection weakly indicated; postorbital carina present; antenna as in figure 268. Thorax with close pits on notum, interstices striated on mesoscutum and collar, narrow and carinate on scutellum and on pronotum; propodeum with prespiracular teeth well developed, posterior corners not forming projections or teeth. Forewing with postmarginal longer than stigmal. Hind femur (Fig. 270) distinctly pitted, densely pubescent with minute pubescence, its length a trifle less than 2x its maximum width, outer ventral margin with a row of nine irregular teeth. Gaster (Fig. 270) with length of

pre-epipygial part less than length of thorax, twice length of epipygium when measured from dorsal side; first tergite smooth and shiny, its length more than half length of pre-epipygial part of gaster; second and third tergites smooth with a single row of very sparse pits on each; fourth tergite with two rows of shallow pits; sixth tergite distinctly pitted; interstices smooth and shiny; posterior margins of first to fourth tergites not emarginate, epipygium slightly pubescent.

Holotype: F. MALAYSIA, Negris S, Pasoh Forest Res. Coll. P. & M. Baker, 14—iii—1980 (AEI)

10. *Megalocolus properator* (Walker)

Halticella properator Walker, 1862:358, Lectotype F. JAVA (BMNH) (examined)

This species is similar to *ducator* in general features but differs from it in having completely black colour all over, scutellum unarmed, third and fourth tergites of gaster with very few sparse pits and interstices broad with extremely few faint shagreening, almost smooth and shiny and in having face more oblique.

Host: Unknown.

Distribution: Java, Singapore, Indonesia (new record)

Materials examined: Lectotype F.; 1F. BORNEO, Sandakan, C.F. Baker, 1927. 1F. PHILIPPINES, Mindanao, C.F. Baker, 1927. 1F. INDONESIA, Sulawesi, C.V. Achterberg, 16. xi. 1985.

11. *Megalocolus proctotuperator* (Walker)

(Figs. 271—272)

Halticella proctotuperator Walker, 1862: 362, Lectotype F. SINGAPORE (HDEO) (examined).

Megaculus fulvipennis Cameron, 1905a; 96, Lectotype M. KUCHING (BMNH) (examined) **syn. nov.**

I studied the primary types of *proctotuperator* and *fulvipennis* and I am unable to separate them on any clear-cut specific character.

Diagnostic features: Length: 10.59 mm. Black; eyes, ocelli, pale yellow; gaster red except epipygium and ovipositor sheath which are black or brownish black; apices of fore and mid femora brownish; tarsi brown. Wings hyaline with brownish tinge.

Head width 2x its length, subequal to maximum width of thorax; relative measurement of POL 26, OOL:22; POL slightly raised; all three ocelli in a slightly raised position; distinctly punctate; scrobe deep; front ocelli in a somewhat triangular pit; frontogenal sulcus indistinct; area below antennal toruli with a median ridge. Antenna with scape almost reaching front ocellus, fourth and fifth segments subequal in length and width; sixth to eighth subequal in length and shorter than fifth; ninth and tenth subequal in length; club length a trifle over 2x length of preceeding segment. Thorax with distinct umbilicate, close pits on notum including on collar, interstices narrow, smooth, less than half diameter of pits, not at all forming striations; apex of scutellum (Fig. 271) broadly rounded; propodeum with anterior and posterior corners forming distinct tooth like projections directed to lateral side; hind femur 1.77x as long as wide, 1.4x as long as hind coxa, distinctly and densely punctate, moderately pubescent, outer ventral margin with seven distinct teeth. Gaster (Fig. 272) length (excluding epipygium and ovipositor sheath) subequal to length of thorax; first tergite smooth and shiny; second and third tergites with a row of pits; fourth tergite with double rows of pits; sixth tergite distinctly and closely pitted, interstices narrow, smooth, shiny; epipygium distinctly pitted, densely pubescent.

Host : Unknown.

Distribution : Singapore, Malaysia (new record), New Guinea (new record).

Materials examined : Lectotype F. 5F. MALAYSIA, Negris. S. P. & M. Baker, 1978-1980. 1F. New Guinea, J.Sedlacek, 15.i.1979.

37. Genus **STENOCHALCIS** Masi

(Figs. 273, 274)

Stenochalcis Masi 1929: 155-156. Type-species: *Stenochalcis quadridentata* Masi, by original designation.

This genus closely resembles *Megalocolus* but can be separated as mentioned in the key to genera in this monograph. It differs from *Megalocolus* in having slender and relatively flat body (Fig 274) (stouter and cylindrical in *Megalocolus*); propodeum flat, area below scrobe without a ridge below interantennal projection but with an unpitted area (Fig.273), epipygium and terebra relatively shorter and stouter. The genus is found in South East Asia and New Guinea. Biology unknown.

1. *Stenochalcis quadridentata* Masi

(Fig.237,274)

Stenochalcis quadridentata Masi 1929:155-156, F. INDIA, Calcutta (ZSI) (examined)

I examined the single female specimen (type) which is in poor condition. It is found pinned through its scutellum. Antennae with most segments missing. In addition to this type, I also examined several specimens conspecific to the type, from Malaysia. These Malaysian ones however have shorter epipygium and ovipositor-sheath than those of type. Otherwise these are the same as the type. The original description of Masi is good enough to recognise this species. However the following additional points are noteworthy: *Female*: Length 2.98-4.06mm. Head as in figure 273, wider than maximum width of thorax; preorbital carinae very slightly indicated; postorbital carinae run close behind eye upwards; genotemporal furrow shallow; OOL a little more than POL; frontogenal sulcus indistinct. Thorax with close umbilicate pits on notum, interstices narrow, somewhat carinate and rugulose; apex of scutellum rounded; propodeum with distinct areolae, lateral teeth absent. Hind coxa without inner or dorsal teeth; hind femur without an inner basal tooth, outer ventral margin with 4-5 teeth. Gaster with first tergite smooth, second to fourth with a

single row of pits; fifth tergite with a few distinct pits, interstices smooth and shiny.

Male : Length 2.71-3.61mm. Resembles female except in having more blackish colour and more stouter antennae.

Host : Unknown.

Distribution : India, Malaysia (new record).

Material examined : Primary type. 5F. 5M. MALAYSIA, Negris S. P. & M. Baker 1978-1979. 13M. INDIA, Tamil Nadu, Annamalai Hills, Coorg, P.S.Nathan date ?.

38. Genus **BRACHYMERIA** Westwood

(Figs. 1-8, 275- 317)

Brachymeria Westwood, in Stephens, 1829:36. Type-species: *Chalcis minuta* Fabricius, designated by Westwood 1839.

The known synonyms of this genus are: *Tumidicoxa* Girault (1911) *Pseudepitelia* Girault (1913b). *Brachepitelia* Girault (1913b) *Tumidicoxoides* Girault (1913b), *Tumidicoxella* Girault (1913b), *Meyeriella* Krausse (1916), *Onchochalcis* Cameron (1904), *Ceyxia* Cameron (1911) and *Holochalcis* Kieffer (1904). Boucek (1988) stated that *Neobrachymeria* Masi (1929) and *Matsumurameria* Habu (1960) are only species groups of *Brachymeria*. According to the same author the Australian *Australochalcis* Girault (1915b), *Microchalcis* Girault (1915b) and *Dirrhinomorpha* Girault & Dodd (1915b) are subgenera of *Brachymeria* Westwood. The other extralimital subgenera of *Brachymeria* are: *Caenobrachymeria* Steffan (1974), *Gahanula* Burks (1960), and *Pseudobrachymeria* Burks (1960). The genus is widely distributed all over the world. They are mostly parasitic on Lepidoptera or Diptera and rarely on Hymenoptera.

KEY TO ORIENTAL SPECIES OF *BRACHYMERIA* WESTWOOD

(Females only)

1. Upper margin of clypeus pubescent on post-clypeus (Figs.297, 299, 304); hind coxa usually with trichoid zone on ventral side (*Matsumurameria* group)..... 2

- Anterior margin (upper margin) of clypeus not fused with frons, sparsely pubescent on post-clypeus; hind coxa without a trichoid zone (except in *marginiscutis* Cameron)6
- 2. Postorbital carinae absent; gaster liver brownish red; hind femora orange red or blackish red with distal tip yellow; hind tibiae yellow (Fig.298) with base red.....CRICULAE (Kohl)
- Postorbital carinae present; other features completely or partly different..... 3
- 3. Upper margin of clypeus fused with frons only on sides, media n margin not fused but distinctly raised; pits on mesoscutum and scutellum usually small.....4
- Anterior margin of clypeus comp letely fused with frons, without a median raised part; pits on thorax not unusually small..... 5
- 4. Each hind coxa with an unusually large tubercle on ventral side (Fig.307); median margin of clypeus raised into conspicuous tubercle (Fig.304); mesoscutum and scutellum (Fig.306) densely pubescent with relatively long hairs — Malaysia..... ACHTERBERGI sp. nov.
- Hind coxa without a tooth or tubercle on ventral side; median margin of clypeus not forming tubercle; pubescence on thorax not as above — N.Borneo.....NITIDA J. N. &J.
- 5. Hind tibia completely yellow with base and ventral margin alone black.....TAIWANA Habu
- Hind tibia dark reddish brown or black with a small subbasal yellow patch and a large apical yellow patch..... RYUKYUENSIS Habu
- 6. Hind femur with a distinct tooth at inner basal side (Fig. 285).....7
- Hind femur without a distinct tooth at inner basal side9
- 7. Hind femur with yellow patch relatively very large (Fig.286) occupying only a trifle less than half length of femur; sixth tergite

- distinctly pitted; parasitic on *Calopepla leayana* Latr.....
**CALOPEPLAE** J.N & J
- Not as above.....8
8. Hind femur (Fig 287) one and four-fifth times to a little more than twice as long as wide, its dorsal side angulate; hind femur usually red with apex white or yellow.....
**PODAGRICA** (Fabr.)
- Hind femur (Fig.285) not more than one and four-fifth times as long as wide, dorsal margin not angulate; hind femur usually black with apex yellow.....**MINUTA** (Linn.)
9. Hind coxa with a distinct ventromesal tooth (Fig.278),.....10
- Hind coxa without a distinct ventromesal tooth.....20
10. Hind tibia yellow with base black or red with ventral margin black or red (Fig.279).....11
- Hind tibia not as above.....13
11. Gaster globose or subglobose; ovipositor sheath not visible from dorsal side; area below scrobe without a distinct smooth median portion; first tergite shagreened**ALBOTIBIALIS** (Ash.)
- Characters partly or completely different from above.....12
12. Hind coxa and femur red with apex of hind femur yellow, base of hind tibia blackish red; apex of scutellum well bilobed; first tergite of gaster shagreened; head a little wider than thorax**KASSALENSIS** (Kirby)
- Hind coxa black; hind femur black with apex yellow; base of hind tibiae black; apex of scutellum weakly emarginate or rounded; first tergite of gaster smooth and not shagreened; head not wider than thorax.....**LASUS** (Walker)
13. Hind tibia completely yellow (Fig.280); found distributed in Palearctic, Nearctic and Ethiopian regions including extreme north of India (Srinagar)**INTERMEDIA** (Nees)
- Hind tibia not as above, most of the area with black colour14

14. Apex of scrobe (Fig.312) not at all reaching front ocellus, pre and postorbital carinae well represented; apex of scutellum (Fig. 314) very broadly rounded; hind tibia brownish black with subbasal and apical yellow patch.....**SALINAE** sp. nov.
 — Not as above; partly or completely different 15
15. Postorbital carinae well developed reaching clearly genotemporal margin16
 — Postorbital carinae absent, if present never reaches genotemporal margin18
16. Antennal radicle (Fig. 275) unusually long (about one-third length of scape) gaster globose or sub-globose; apex of scutellum entire; gregarious parasite of Lepidoptera; length 3.3-3.4mm **COXODENTATA** J. N. & J.
 — Characters partly or completely different.....17
17. Area below interantennal projection smooth and raised; scutellum with interstices of pits wider than diameter of pits on median region; apex of scutellum weakly emarginate; hind tibia black with clear distinct sub-basal and apical yellow patches.....
 **TAPUNENSIS** J.N. & J.
 — Area below scrobe without a smooth portion; interstices of scutellum narrow; apex of scutellum not emarginate; hind tibia black with a tan spot at apex dorsolaterally; without a subbasal yellow patch or spot..... **NIGRIFEMORATA** J.N. & J.
18. Metanotum below apex of scutellum forming a distinct characteristic semicircle (Fig.276); hind tibia completely liver brownish black with a small yellowish patch at apex dorsolaterally; dorsal margin of propleura rounded India Host: *Dasychira* pupa....
**DUNENSIS** J.N. & J.
 — Not as above; features partly or completely different.....19
19. Apex of scutellum (Fig. 277) bilobate; subbasal yellow patch very small; area below scrobe a little convex; Japan (extra-limital).....**NAMBUI** Habu

- Apex of scutellum weakly emarginate; not distinctly bilobate; subbasal yellow patch larger than in alternate; parasitic on *Porthetria dispar* (L.).....**PORTHETRIALIS** J.N.& J.
- 20. Postorbital carina absent or indistinct 21
 - Postorbital carina present and distinct..... 33
- 21. Apex of scutellum distinctly bilobed or incised with dense silvery pubescence on two lobes; hind femur red, often with varying black patches of varying size (often quite large) on outer disc; hind tibia yellow or red with base and ventrolateral margins black or brown or reddish **ALBICRUS** (Klug)
 - Apex of scutellum not emarginate and without dense pubescence, if emarginate then only very weakly so without dense pubescence; hind leg colour may or may not be the same as in the alternate 22
- 22. First tergite of gaster distinctly microsculptured or at the most shagreened..... 23
 - First tergite of gaster smooth and shiny..... 27
- 23. Hind tibia with a black or brown or reddish median band with base and apex yellow; preorbital carinae distinctly developed 24
 - Hind tibia not as above; preorbital carinae may or may not be present 25
- 24. Hind tibia yellow with a reddish black (median one-third) band at middle; eyes minutely pubescent **SHANSIENSIS** Habu
 - Hind tibia mostly black with base faintly reddish merging with yellow subapically; apex with a small yellow patch; eyes bare **INERMIS** (Fonscolombe)
- 25. Preorbital carinae distinctly developed; hind tibia completely yellow; gaster approximately 1.5x thorax **CARINATA** J.N. & J.
 - Preorbital carinae absent or at the most very faintly indicated; hind tibia yellow with base black or yellowish brown.....26

26. Area below scrobe with a raised smooth portion in the middle; vertex distinctly pitted; hind tibia yellow with base black; hind femur black with apex yellow, apex of scutellum broad and weakly emarginate; parasitic on *Diaphania indica* **MARGARONIAE** J.N. & J.
- Area below scrobe without a median, smooth, raised portion (uniformly pitted); hind tibia yellow with base brown or pale red; hind femur red with apex yellow, often with a black patch of varying size on disc; apex of scutellum narrower and not emarginate **JAYARAJI** J.N. & J.
27. Base of hind tibia yellow and apex yellow, remaining median portion black..... **APICICORNIS** (Cam.)
- Hind tibia not as above; preorbital carinae indistinct or faintly indicated 28
28. Head and body completely rufous except the following parts which are immaculate yellow: apices of all femora; apices of all tibiae; subbasal small area of hind tibiae; tarsi completely (In a few specimens head slightly blackish); pre and postorbital carinae absent; apex of scutellum not emarginate..... **RUFESCENS** (Cam.)
- Not as above; partly or completely different..... 29
29. Hind tibia black (or liver brown) with apex yellow, preorbital carinae indistinct..... **CARBONARIA** (Zenth.)
- Hind tibia not as above; preorbital carinae may or may not be present 30
30. Preorbital carinae distinct; apex of scutellum not emarginate; primary or secondary parasite; widely distributed all over Oriental Region, Egypt and Japan..... **EXCARINATA** Gahan
- Preorbital carinae indistinct; apex of scutellum may or may not emarginate, not widely distributed as in alternate..... 31
31. Postmarginal about half marginal; scape longer than segments four to seven combined; gaster rufous from third segment to ovipositor sheath; hind tibiae pale brownish red with

- immaculate yellow patch subbasally and apically.....
 **IMANJERICA** sp.nov.
- Characters not as in the above combination, partly or completely different..... 32
32. Sixth tergite with distinct umbilicate pits; interstices shagreened; postmarginal one-third marginal; length 4.2 mm; parasitic on *Aspidomorpha miliaris* F.-India.....
 **BURKSI** Chottani
- Sixth tergite densely pubescent, hence difficult to see pits; length 1.5mm; parasitic on *Prodenia* sp. -Philippines
 **PRODENIAE** (Ash.)
33. Hind femur red or blackish red without yellow patch or spot at apex; hind tibia yellowish red without any yellow patch subbasally or apically; first tergite of gaster (Fig.309) with dense pubescence on sides; remaining tergites densely pubescent; apex of scutellum weakly emarginate; parasitic on *Danus chrysippus*.....
 **SUREKAE** sp. nov.
- Not as in above combination of characters; partly or completely different..... 34
34. Preorbital carinae raised and converge to join with scrobal margin (Fig. 282); scutellum often with a single median strong or weak ridge or carina; hind tibia completely yellow.....
 **SCUTELLOCARINATA** J.N. & J.
- Not as above; partly or completely different 35
35. Scutellum with always more than one longitudinal carina (Fig. 316); gaster mostly rufous; hind tibia black with apex yellow; Indonesia (Ambon island).....**AMBONENSIS** sp.nov.
- Not as above, partly or completely different...36
36. Hind coxa with a zone of trichoid sensillae on inner ventral area; gaster globose; hind tibia with base black which extends towards apex through ventral margin with an extension towards dorsal side from mid ventral margin (in south eastern forms forming a median band**MARGINISCUTIS** (Cam).

- Hind coxa without a trichoid zone of hairs; other characters partly or fully different 37
- 37. Hind femora (Fig. 295) yellow at basal and apical area, sometimes almost wholly yellow or black with apex yellow; hind tibia wholly yellow; apex of scutellum distinctly, bilobed with dense silvery or golden pubescence at sides near apex or on all around apical margin.....38
 - Not as above.....40
- 38. Thorax and gaster with dense golden pubescence...**AUREA** (Girault)
 - Not as above 39
- 39. Hind femur (Fig. 295) with punctures on disc relatively smaller than in alternate; head compressed from front to hind direction in lateral aspect (Oriental, Australia and Japan).....
 - **MEGASPILA** (Cam.)
 - Hind femur with relatively large pits on disc, a little more shorter than in alternate; head not as above (Palearctic only)**FEMORATA** (Panzer)
- 40. Hind tibia yellow with base black or brown or reddish brown; ventrolateral margin of hind tibia with or without black colour (Fig. 294) 41
 - Not as above.....48
- 41. Sixth tergite with a narrow longitudinal median ridge; postorbital carinae become obsolete before reaching genotemporal margin; apex of scutellum deeply incised; length 7.24 mm.**GIGANTICA** J.N.J.
 - Not as above, partly or completely different.....42
- 42. Gaster yellowish orange or rufous; hind femora largely red (or liver brown) with apex yellow.....43
 - Gaster black; hind femora red or black (or red with black patch on disc) with apical yellow patch.....44

43. Apex of scutellum clearly emarginate; hind tibia (Fig. 293) with a large black or liver brown colour extending from base to all over one-third of hind tibia (Fig. 293); postorbital carina not branched..... **CROCEOGASTRALIS** J.N.J.
- Apex of scutellum rounded; hind tibia (Fig. 294) with basal black patch much smaller than in alternate; postorbital carinae usually branched..... **SEMIRUFA** (Walker)
44. Apex of scutellum distinctly and well emarginate with dense silvery pubescence; hind femur red with a yellow spot or patch at apex (in some cases black patches of varying sizes present on hind femoral disc).....45
- Apex of scutellum rounded or entire or at the most very weakly or slightly emarginate; hind femur always black with apex yellow 46
45. Hind femur red (often with a black patch of varying size on outer disc) with a yellow spot or patch at apex.....
- **BENGALENSIS** (Cam.)
- Hind femur black with apex yellow..... **DEESENSIS** (Cam.)
46. Antennae (Fig. 281) characteristically and relatively long; interstices on scutellum mostly wider than diameter of pits on median region; parasitic on *Simplica robustalis* G.....
- **NURSEI** (Cam)
- Not as above.....47
47. Antennal club more than twice preceeding segment; gaster globose or subglobose..... **EUPLOEAE** (Westwood)
- Antennal club distinctly less than twice length of preceeding segment; gaster acuminate, not globose.....
- **JAMBOLANA** (Gah.)
48. Hind tibia black (or blackish brown or reddish brown) with distinct subbasal and apical yellow patches (similar to Fig. 303) 49
- Hind tibia of different pattern of colour without a distinct subbasal yellow or tan patch or spot56

49. Antennae (Fig. 283) unusually swollen towards apex
**THRACIS** (Crawford)
 — Not as above.....50
50. Preorbital carinae distinct and well developed.....51
 — Preorbital carinae absent or indistinct.....54
51. Apex of scutellum rounded or entire, not at all emarginate;
 parasitic mostly on *Opisina arenosella* Walker.....
**NEPHANTIDIS** Gah.
 — Apex of scutellum strongly or weakly emarginate.....52
52. Gaster globose or subglobose; interstices on median regions of
 scutellum not wider than diameter of pits or half diameter of
 pits. Philippines, Japan..... **KAMIJOI** Habu
 — Not as above..... 53
53. Hind femora (Fig. 303) completely black; apex of scutellum
 distinctly bilobed (Fig. 302); length 5.06 mm....**HAYATI** sp.nov.
 — Hind femora black with a large yellow patch at apex; apex of
 scutellum weakly emarginate (Fig. 284); length 3.7 mm
**FULVITARSIS** (Cam.)
54. Marginal vein nearly 4x stigmal; apex of scutellum
 weakly emarginate; length 2.6-2.8 mm. Philippines.....
**BANKSI** (Ashmead)
 — Marginal vein more than 4x stigmal; apex of scutellum strongly
 emarginate 55
55. Postorbital carinae branched (Fig. 292); scape as long as segments
 four to six combined; height of malar space a little less than
 one-third height of eye; scape black; area below scrobe without
 a median raised portion.....**SHILLONGENSIS** J.N.J.
 — Postorbital carinae straight; scape distinctly less than segments
 four to six combined, brown at dorsoapical part with a small
 yellow patch at ventromesal part; area below scrobe with a
 raised median portion.....**HATTORIAE** Habu

56. Hind femora red without a yellow spot or patch at apex; hind tibia black or ferruginous with base and apex red; preorbital carinae hardly indicated; apex of scrobe clearly reaching front ocellus; if apex of scrobe not reaching front ocellus then preorbital carinae well developed and hind femora often with varying size of a black patch on disc and both mandibles bidentate57
 — Characters partly or completely different from above.....58
57. Preorbital carinae well developed; apex of scrobe not reaching front ocellus; hind tibiae ferruginous with base brownish red and apex yellow; both mandibles bidentate; hind femora often with a black patch of varying size on disc
**ATRIDENS** (Waterston)
 — Preorbital carinae hardly indicated; apex of scrobe reaches front ocellus; hind tibia ferruginous or black with base and apex red.....**ALTERNIPES** (Walker)
58. Apex of scrobe not reaching front ocellus59
 — Apex of scrobe clearly reaching front ocellus... . . .62
59. Scape subequal or as long as length of antennal segments four to six combined; maximum width of scrobe subequal to its length or a trifle less than its maximum length; hind tibia pale blackish brown or ferruginous with a yellow patch at apex and at base (often the yellow patch at base indistinct)
**WIEBESINA** J.N.J.
 — Scape distinctly longer than segments four to six combined (other characters partly or completely different)60
60. Hind tibia brownish black except tip which is yellowish brown; apex of scutellum weakly emarginate.....
**OLETHRIA** (Waterston)
 — Hind tibia black with base and apex yellow; apex of scutellum rounded61
61. Preorbital carinae well developed; scape longer than length of antennal segments four to seven combined; scutellum relatively

- low in lateral view and moderately declined posteriorly.....
**LONGISCAPOSA** J.N.J.
- Preorbital carinae indistinct; scape shorter than length of antennal segments four to seven combined; scutellum high in lateral view, distinctly declined posteriorly.....
**SECUNDARIA** (Ruschka)
62. Apex of scutellum rounded, never with a median carina.....63
- Apex of scutellum emarginate or bilobed; scutellum often with a median carina.....70
63. Preorbital carina well developed and distinct.....64
- Postorbital carina absent.....69
64. Hind femur completely black; hind tibia black with a faint brownish colour at tip dorsally..... **MENONI** J.N.J.
- Hind femur black or reddish black with distal apex yellow or atleast with a small yellow spot or patch; hind tibia not as above 65
65. Hind femur liver brown with apex pale yellow; hind tibia liver brown with base and apex pale yellow (narrowly) pre and postorbital carinae present; first gastral tergite faintly shagreened **PHYA** (Walker)
- Not as in the above combinations 66
66. Scape reaches front ocellus, longer than length of segments four to seven combined; interstices on scutellum half as broad as diameter of pits; mostly parasitic on *Eublemma amabilis* from *Laccifer lacca***TACHARDIAE** (Cam)
- Scape not quite reaching front ocellus; shorter than length of segments four to seven combined; interstices on scutellum narrow67
67. Fifth segment of hind tarsi three times as long as wide; basal yellow colour of hind tibia (Fig 290) one-third length of hind tibia; frons with pubescence denser than in alternate; gaster longer (Figs.291,300).....68

- Fifth segment of hind tarsi 2x as long as wide; basal yellow colour of hind tibia (Fig.288) much shorter than one-third length of hind tibia; frons with lesser pubescence than in alternate; gaster shorter (Fig.289) than in alternate **HIME** Habu
- 68. Gaster 1.5x length of thorax; 2.32x as long as its width (Fig.300) **NOSATOI** Habu
- Gaster less than 1.5x length of thorax; 1.87x as long as its width (Fig.291)..... **ATTEVIAE** J.N.&J
- 69. Scutellum with a long unpitted smooth median area (Fig.296); postmarginal vein 2.5x stigmal; tegulae black..... **NIGRITEGULARIS** J.N.& J
- Scutellum without such an unpitted area; postmarginal a little less than 2x stigmal; tegulae yellow..... **HEARSEYI** (Kirby)
- 70. Hind tibia wholly black (often with a narrowly reddish brown colour at dorsoapical angle); scutellum longer than usual, one and one-ninth times as long as wide; length 4.6-5.6mm **LUGUBRIS** (Walker)
- Hind tibia with long apical and subbasal yellow or tan patches; mesoscutellum as long as or a little longer than wide; length 7-8mm **FISKEI** (Crawf.)

Unplaced in the key for want of details:

All the species placed as 'Unplaced species' under this genus in this work.

Subgenus **BRACHYMERIA** Westwood s.str.

1. **Brachymeria** *coxodentata* Joseph, Narendran & Joy
(Fig. 275)

Brachymeria coxodentata Joseph, Narendran and Joy, 1970a 2:81,
Holotype F. (by mistake M.), INDIA, Calicut (DZCU)

The important features of this species are: long radicle preorbital carina absent; postorbital carina present; apex of scutellum entire; hind coxa with tooth; hind femora black with apex yellow; hind tibia black with subbasal and apical yellow patch.

Host: Gregarious parasites of unidentified Lepidoptera (Hesperiid?, pupa on lilly plant.)

Distribution: India (Kerala), Philippines, Vietnam, Malaysia Thailand (new record)

Materials examined: Apart from holotype and paratypes : 1F. THAILAND, R.E.Elbel, 19.xii.1952. 1F. PHILIPPINES, Milliron, 13.ix.1943. 1F.VIETNAM, R.E.Luch, 13.vi.1960. 1F. MALAYSIA.

2. *Brachymeria tapunensis* Joseph, Narendran & Joy

Brachymeria tapunensis Joseph, Narendran & Joy, 1972d: 30, Holotype F. SAMOA (BBM)

This species resembles *coxodentata* in general but differs from it in having interstices on scutellum wider; presence of median elevated smooth area below scrobe, gaster longer than thorax.

Host: Unknown.

Distribution: Samoa, Philippines, India (Kerala) (new record)

Materials examined: Apart from holotype : 1 F. INDIA, Kerala, Calicut University Campus, Narendran & party, 6.viii.1986. 1F. PHILIPPINES, Mindanao, C.F. Baker, 1927.

3. *Brachymeria nigrifemorata* Joseph, Narendran & Joy

Brachymeria nigrifemorata Joseph, Narendran & Joy, 1972d:32, Holotype F. HONGKONG (BBM)

This is a rather different species with hind femora black with a tan colour at apex, scape longer than length of antennal segments four to six combined. Scrobe reaching front ocellus; preorbital carinae absent and gaster almost equal to thorax; first tergite smooth and shiny; ovipositor sheath visible from dorsal side. Only the holotype is known so far.

Biology: Unknown.

Distribution: Hongkong .

4. *Brachymeria dunensis* Joseph , Narendran & Joy
(Fig.276)

Brachymeria dunensis Joseph , Narendran & Joy 1972b: 552,
Holotype F. INDIA (Dehra Dun) (FRI).

This is a unique species with a metanotum below the scutellum is distinctly forming a semicircle which is not found represented in any species so far described from Oriental Region.

Host: *Dasychira* pupa (Lymantriidae)

Distribution: India.

Material examined: Holotype and paratypes.

5. *Brachymeria porthetrialis* Joseph, Narendran & Joy

Brachymeria porthetrialis Joseph , Narendran & Joy 1972c:27,Holotype,
INDIA , Karnataka , Bangalore (BMNH).

For some time I thought this is a subspecies of *Brachymeria ntermedia* Nees (Joseph et al , 1973) but this species differs from *Brachymeria intermedia* in having entirely different pattern of colour, gaster shorter than thorax and interstices of scutellum narrow and rugose.

Host: *Porthetria* sp. on *Ficus religiosa*.

Materials examined: Apart from the type: 46F. INDIA,
Narendran & Party , 1986.

6. *Brachymeria lasus* (Walker)
(Fig.278)

Chalcis lasus Walker 1841: 219, Lectotype F. INDIA, Calcutta
(BMNH) (examined).

The known synonyms are: *Oncohalcis marginata* Cameron (1904); *Chalcis obscurata* Walker (1874); *Chalcis inclinator* Walker (1862); *Chalcis punctiventris* Cameron (1911); *Chalcis nitator* Walker (1862); *Chalcis papuana* Cameron (1913); *Tumidicoxa regina* Girault (1913); *Chalcis regina* var. *dentata* Girault (1915b); *Chalcis regina* var. *copernaci* Girault (1936).

Hosts: This is polyphagous of several species of Lepidoptera (see host-parasite index); occasionally hyperparasitic. It is an extremely useful parasite keeping *Anadevidia peponis* (Fab.) (Noctuidae) a serious pest of Snakegourd (a widely popular cucurbitaceous vegetable of Malabar) under control in Malabar.

Distribution: World- wide.

Materials examined: Apart from primary type, several thousands of specimens from all over Oriental, Australian & Palaearctic regions.

7. *Brachymeria albotibialis* (Ashmead)

(Fig. 279)

Chalcis albotibialis Ashmead 1904a: 12, Holotype F. PHILIPPINES (USNM) (examined)

Brachymeria (B.) rufogastri Husain & Agarwal, 1982b: 503, Holotype F. INDIA (U.P.) Pant Nagar (ZDAMU) (examined) **syn. nov.**

This species varies in colour. The black colour of gaster and hind legs is often replaced by red in many specimens. It resembles *lasus* but can be separated in having a globose or subglobose gaster often with shagreened first tergite. I examined the holotype of *rufogastri* which is nothing but *albotibialis*.

Host: *Erionota thrax* L.; *Pelopidas mathias* (F.); *Pericyma crugeri* B. and *Pieris brassica* L.

Distribution: India, Philippines. Singapore (new record).

Material examined: Apart from primary types: 1F. INDIA, Tamil Nadu from *Pelopidas mathias* (F.) 7.ix.1918. 1F. SINGAPORE,

C.F.Baker, 1927. 1 F. Tamil Nadu, Tanjore, M.S.Mani, 19.iii. 1932. 3 F., Samalkot, N.R.Rao, 19.iii. 1956. 1 F. Delhi, P.C.Mukerjee 5.ix. 1942 and a few specimens from Kerala and Karnataka.

8. *Brachymeria intermedia* (Nees)

(Fig. 280)

Chalcis intermedia Nees, 1834: 29. Types: Probably lost. Type-locality: GERMANY: Sickershausen.

Oncochalcis quettaensis Cameron, 1906:94, F. PAKISTAN, Quetta (BMNH) (examined) **syn.nov.**

The known synonyms are: *Chalcis flavipes* Crawford (1910a), *Chalcis distinguenda* Walker (1834), *Chalcis tibialis* Walker (1834) *Chalcis angulata* Walker (1834) *Chalcis minuta* Audouin (1842) (not Linnaeus), *Chalcis scirropoda* Forster (1859) and *Chalcis boops* Thompson (1876).

Under the Lectotype of *quettaensis* (no.5-127 F. BMNH) I found a label by Ferriere (label dated 1939) as *Brachymeria intermedia* (Nees). Under this label, there is another label by G.J.Kerrich written as "I doubt this." I examined the type of *quettaensis* and hereby confirm the synonymy by Ferriere.

Host: Primary parasite of several species of Lepidoptera belonging atleast to ten families. Occasionally parasitic on Muscoids

Distribution: Europe, Mediterranean Region, Middle East including Iran, Iraq, North & South America (introduced), China, Extreme Northern parts of Indian subcontinent.

Material examined: 2 F. 1 M. INDIA, Srinagar, Kashmir, M.K. Zutshi on vii. 1964 from *Porthetria* pupa. Apart from this several identified specimens present in BMNH and USNM.

9. *Brachymeria euploae* (Westwood)

Chalcis euploae Westwood, 1837: 6, ? F. INDIA (HDEO)

Brachymeria (B.) *flavotibialis* Husain & Agarwal, 1982b:505, F. INDIA, Pilibhit (ZDAMU) (examined) **syn.nov.**

After studying several specimens of this species, I found that the distinct row of pits on dorsal surface of second tergite of gaster is a variable character found occasionally in this species. I examined the type of *flavotibialis* and I cannot separate it from *euploae* in any clear-cut specific character. *Brachymeria hearseyi* var. *xanthotenus* Waterston is a known synonym of *euploae*.

Hosts : *Chalcocelis albigutta* Sn (Lymacodidae), *Dasychira securis* B. (Lymantriidae), *Erionota thrax* Linn. (Hesperiidae), *Euploea core* Cram. (Nymphalidae), *Hidari erava* Moore (Hesperiidae), *Homono coffearia* Ni. (Tortricidae), *Hyblaea puera* Cram. (Hyblaeidae), *Kirrodesa spicilis* Hew. (Nymphalidae), *Leucania separata* Walker (Noctuidae), *Mehasena corbette* Tams. (Psychidae), *Opisina arenosella*, Walker (Oecophoridae), *Oxyodes scrobiculata* Fab. (Noctuidae), *Perina nuda* Fab. (Lymantriidae), *Psara* sp. (Pyrilidae), *Pyrausta machaeralis* Walker (Pyrilidae), *P. nubilalis* Hubner (Pyrilidae), *Telecota bambusae* Moore (Hesperiidae), *Virachola isocrates* Fab. (Lycaenidae), *Mycalesis* sp. (Nymphalidae) and *Tachinid* sp. (Tachinidae).

Distribution: India, North Borneo, Sumatra, Java and Philippines,

Materials examined : 1F. INDIA, Calcutta, S.K.Gupta, v.1981. 15F. Kerala, Narendran & party, 1985-1987. 1F. Bengal, H.M.L 23.x.1909. 1F. Dehra Dun, 10.ix. 1926. 6F. INDIA, J.C.M.Gardner, 3.1.1938. 2F. Tamil Nadu, Coimbatore, T.V.S. 20.xii.1917. 5F. 1M. Coimbatore, R.C.W. 20.x.1917. 3F. 1M. N.Malabar, I.P.Janaki, viii. 1946. In addition, several specimens collected from Coimbatore, Karnataka etc in India and from several other places in Oriental Regions.

10. *Brachymeria hearseyi* (Kirby)

Chalcis hearseyi Kirby, 1883a: 76, F. INDIA, Barrackpore (BMNH) (examined)

Diagnostic features (apart from key characters): area below scrobe with a raised smooth portion; apex of scutellum rounded; scrobe reaching front ocellus; gaster length subequal to thorax; first tergite smooth and shiny; interstices on scutellum narrow and rugulose.

Host : Pupa of Nymphalidae

Distribution : India.

Material examined : Apart from type: 8F. INDIA, Tanjore M.S.Mani, 22.xi.1931.

11. *Brachymeria nursei* (Cameron)

(Fig.281)

Oncochalcis nursei Cameron, 1907b: 580 F. INDIA, Abu (BMNH) (examined)

Epitelia mathurai Mani & Dubey 1973: 5 M. INDIA, Punjab (USNM) (examined) *syn. nov.*

The genus *Epitelia* Kirby is a synonym of *Stypiura* Kirby (Steffan, 1956) which is entirely different from the genus *Brachymeria*. The type of *mathurai* is a male of the species *B. nursei* which has long characteristic antennae, smooth and broad interstices on median regions of scutellum, mesoscutum and on scapulae. A good redescription is given by Joseph et al (1973).

Hosts : *Plecoptera reflexa* Guenee (Noctuidae), *Simplica robustalis* Guenee (Noctuidae),

Distribution : India.

Materials examined : Apart from primary type : 2F. INDIA, Tamil Nadu, Coimbatore, C.K.S. 15.xii.1939, 49 F.1 M. Tindivanam M.Basheer, 4.iii.1941.

12. *Brachymeria marmonti* (Girault)

Chalcis marmonti Girault 1924: 175 ? F. AUSTRALIA (QMB)

The known synonyms are: *Chalcis wittei* Schmitz (1946) and *Brachymeria koduvalliensis* Joseph, Narendran & Joy (1973).

Diagnostic features: Pre and postorbital carinae present; scrobe reaching front ocellus; scutellum with interstices narrow, less than half diameter of pits, often carinate; apex of scutellum rounded.

Host : Hyperparasite of Lepidoptera through Braconidae and Ichneumonidae.

Distribution : Widely distributed in Africa and South Asia to Eastern Australia.

Material examined : 20 F.5M. from different parts of South India by Narendran & party. 1 F. PHILIPPINES, H.N.Torrevillas, 2.v.1964

13. *Brachymeria gigantea* Joseph, Narendran & Joy

Brachymeria gigantea Joseph, Narendran and Joy, 1972a: 48, F. JAVA (RNHL).

Diagnostic features: Scrobe reaches front ocellus; area below scrobe not smooth but with punctures, antennal scape distinctly longer than segments 4 to 6 combined; apex of scutellum deeply emarginate and bilobed with dense pubescence; postorbital carina not reaching genotemporal margin. First gastral tergite finely shagreened and sixth gastral tergite with a median longitudinal ridge

Host : *Melanitis* sp. (Nymphalidae)

Distribution : India, Java.

Material examined : Holotype and paratype.

14. *Brachymeria deesensis* (Cameron)

Oncochalcis deesensis Cameron 1906: 285, F. INDIA, DEESA (BMNH) (examined)

The type of *deesensis* is similar to *B.gigantica* but postorbital carina reaches genotemporal margin in *deesensis* and apex of scutellum not so deeply emarginate as in the case of *B.gigantica*. There is no carina on sixth tergite in *deesensis*.

Host : Unknown.

Distribution : India.

Material examined : Lectotype only

15. *Brachymeria scutellocarinata* Joseph, Narendran and Joy
(Fig. 282)

Brachymeria scutellocarinata Joseph, Narendran & Joy, 1972a: 45, F.
(RNHL)

The preorbital carinae is raised slightly and distinctly joins the scrobal margin. The median scutellar carinae is weak in some cases.

Host : Tachinid pupa; *Sturia macrophalus*

Distribution : British N.Borneo, Java (new record), India.

Material examined : Apart from Holotype and Allotype; 1 F. INDIA, Coimbatore, M.B. 28.x.1935. 1 F. Calicut, K.J.Joseph, 6.viii. 1967. 2F. JAVA, C.Fraussen, Jan. 1930.

16. *Brachymeria fiskei* (Crawford)

Chalcis fiskei Crawford 1910a: 16, F. JAPAN (Hokkaido) (USNM)
(examined)

In India this species is reported from West Bengal only. A very large species (7-8mm).

Hosts : : Tachinidae, *Crossocosmia* and *Tachina*.

Distribution : India, Japan, N.Borneo.

Material examined : 1 F. BRITISH N.BORNEO.

H.Holtman, 15.vii. 1962 and specimens present in BMNH and USNM during 1980 and 1986 respectively.

17. *Brachymeria lugubris* (Walker)

Chalcis lugubris Walker 1871: 49, F.HONGKONG (BMNH)(examined)

The only known synonym of this species is *Chalcis atrata* Kirby (1883). This resembles *B. fiskei* in general appearance, but hind tibia almost wholly black and mesoscutellum one and one-ninth as long as wide. This is a smaller species (4.6-5.6mm) than *fiskei*.

Hosts: *Atteva fabriciella* (Swederus) (Yponomeutidae) and indetermined tachinid pupa.

Distribution: From India and South China to Australia.

Material examined: Apart from primary types; 1 F. INDIA, Mysore, Joseph and Lal, 2.x.1968. 1 F. JAVA, J.V.D. Vecht, 3-9.iv. 1933. 1F. JAVA, J.V.D. Vecht 12.v.1935. 1 F. TAIWAN, H. Sauters, 1908. 2F. NEEPANAGAR, S.N. Chatterjee, 4.xi.1958. 1F. SINGAPORE, Coll. Biro, 1902. 1F. TAIWAN, Taihorinsho, 1909. 1F. TONKIN, VIETNAM, Binard, 1907. 1F. J.V.D. Vecht, MALAYSIA, Tapah, 1936. 1F. JAVA, J V.D. Vecht, C.H.T. 1934.

18. *Brachymeria menoni* Joseph, Narendran and Joy

Brachymeria menoni Joseph, Narendran and Joy, 1972g: 419, M. PAKISTAN, Abbotabad (IARI).

This species comes close to *Brachymeria inornata* Masi (1940) but differs from that species in having shorter gaster with shorter epipygium and ovipositor sheath. In *inornata* antennal toruli is a little lower than the level of ventral margin of eyes.

Host: *Metriona circumdata* Herbst (Chrysomelidae)

Distribution: India, Pakistan and Papua New Guinea.

Materials examined: Holotype and Allotype. 1 F. INDIA, Kerala, Narendran & Party, 1985.

19. *Brachymeria banksi* (Ashmead)

Chalcis banksi Ashmead 1905:964, Lectotype F. PHILIPPINES, Manila (USNM) (examined).

Brachymeria punctifrons Joseph, Narendran and Joy, 1970a:283, M. INDIA, Calicut (DZCU) **syn. nov.**

During my study stay at USNM, I could ascertain the real identity of *Brachymeria punctifrons* when I studied the primary types of *banksi*. The species *punctifrons* seems to be a variant form of *banksi* from which it does not differ in any specific character.

Host: Unknown.

Distribution: India, Philippines and Vietnam.

Material examined: Apart from the primary types: 1F. 1M. VIETNAM, C.M. Yoshimoto, 11.xii.1960.

20. *Brachymeria burksi* Chottani

Brachymeria burksi Chottani 1966:89, F. INDIA, West Bengal (ZSI) (examined)

This comes very close to *Brachymeria prodeniae* except for the characters mentioned in the key above.

Host: *Aspidomorpha miliaris* Fabricius (Chrysomelidae)

Distribution: India, West Bengal.

Materials examined: Apart from Holotype, several examples present in ZSI, USNM and BMNH examined.

21. *Brachymeria thracis* (Crawford)

(Fig. 283)

Chalcis thracis Crawford, 1911:267, Lectotype F. PHILIPPINES, Manila (USNM) (examined)

Brachymeria medicina Joseph, Narendran & Joy 1970b: 289, F. INDIA, Calicut (DZCU) *syn. nov.*

This species is unique in having characteristic antenna which is swollen towards apex. The identity of *medicina* could be ascertained as *thracis* after examining the primary type of *thracis*.

Host: Unknown.

Distribution: Philippines and India.

Material examined: Apart from types: 3F. PHILIPPINES C.F. Baker, 1927.

22. *Brachymeria tachardiae* (Cameron)

Chalcis tachardiae Cameron 1913:93, F. INDIA, Dehra Dun (BMNH) (examined)

This species has reddish black femur with apex yellow; hind tibia reddish black with yellow patches subbasally and apically with the base pale brownish yellow.

Hosts: *Acridomyia sacharovi* Stackelberg (Muscidae), *Kerria lacca* (Kerr.) (Kerridae), *Earias* sp. (Noctuidae), *Eublemma amabilis* Moore (Noctuidae) and *Hypsipyla* sp. (Pyralidae).

Distribution: India.

Material examined: Apart from types : 5F. INDIA, Dehra Dun, P.M. Glover, 7.vii.1937.

23. *Brachymeria nephantidis* Gahan

(Figs. 1-8)

Brachymeria nephantidis Gahan 1930: 5F. "Ayodhyapattanam", (USNM) (examined).

This is an important parasite of *Opisina arenosella* Walker the Black Headed Catterpillar pest of Coconut in Penisular India and Sri Lanka.

Host: *Opisina arenosella* Walker (Oecophoridae), *Pectinophora gossypiella* (Saunders) (Gelechiidae).

Distribution: India, Sri Lanka, Philippines

Material examined: Apart from the primary types, several hundreds of specimens were collected and studied from the coconut growing tracts of Kerala. 1F. collected from Manila, F.L. Butae on 25.v.1935 from Pink Boll Worm.

24. *Brachymeria kamijoi* Habu

Brachymeria kamijoi Habu 1960:188, M. JAPAN (EIHU)

This species resembles *Brachymeria nephantidis* Gahan in colour but differs from having globose or subglobose gaster and emarginate apex of scutellum.

Host: Unknown.

Distribution: Japan, Philippines.

Materials examined: 1 F. PHILIPPINES, H.M. Torrivillas 29 iii. 1965.

25. *Brachymeria fulvitarsis* (Cameron)

(Fig. 284)

Chalcis fulvitarsis Cameron 1906:94, M. PAKISTAN, Quetta (BMNH) (examined)

This species resembles *B. minuta* but differs from it in lacking a tooth or tubercle on the inner basal side of hind femora and in having the apex of scutellum very weakly emarginate.

Host: Indetermined Lacciferid.

Distribution: India and Pakistan.

Materials examined: Apart from the type, 1M. PAKISTAN, Karachi, Coll. Madhihasan, 1M. Coimbatore, Coll. Unknown, October 1933.

26. *Brachymeria minuta* (Linnaeus)

(Fig. 285)

Vespa minuta Linnaeus 1767:952, F. ? Europe (?UZM)

The known synonyms of this species are: *Chalcis pusilla* Rossi (1790), *Chalcis brevicornis* Klug (1834), *Chalcis scrobiculata* For. (1859), *Chalcis tricolor* Forster (1859), *Chalcis fumata* Thompson (1875), *Chalcis paraplesia* Crawford (1910), *Chalcis jezoensis* Matsumura (1912), *Brachymeria puttorensis* Joseph, Narendran & Joy (1971) and *Brachymeria fuchuensis* Habu (1962).

Host: About 10 species of Diptera (see host-parasite index) (about 15 species are parasitised secondarily).

Distribution: World-wide in distribution.

Materials examined: Innumerable specimens from all over Oriental as well as Palaearctic regions.

27. *Brachymeria calopeplae* Joseph, Narendran and Joy

(Fig. 286)

Brachymeria calopeplae Joseph, Narendran and Joy 1972b: 554, F. INDIA, Dehra Dun (FRI)

Once this species has been thought to be a subspecies of *Brachymeria minuta* (Joseph et.al. 1973) but on deeper study it has been found to be a host specific distinct species of *Calopepla leayana* Latreille (Cassididae).

Distribution: India.

Materials examined: Apart from the types several specimens from (about 25) Dehra Dun and a few specimens from West Bengal.

28. *Brachymeria podagrica* (Fabricius)

(Fig. 287)

Chalcis podagrica Fabricius 1787:148, M. INDIA, Tamil Nadu Tranquebar (UZM)

Brachymeria (Matsumurameria) aligarhensis Husain and Agarwal, 1982: 16,499,F. INDIA, Uttar Pradesh (ZDAMU) (examined) **syn. nov.**

The known synonyms are: *Chalcis Fonscolombe* Dufour (1841), *Chalcis Alphius* Walker (1846); *Chalcis Xerxena* Walker (1846a); *Chalcis Amenocles* Walker (1846a); *Brachymeria pulchripes* Holmgren (1868); *Chalcis mansueta* Walker (1871); *Chalcis callipus* Kirby (1883); *Chalcis eccentrica* Cameron (1897); *Chalcis borneanus* Cameron (1905a); *Chalcis garutianus* Gunther (1936); *Brachymeria becarii* Masi (1929); *Chalcis neglecta* Masi (1916); *Chalcis mikado* Cameron (1888); *Chalcis dipterophaga* Girault & Dodd (in Girault, 1915b); *Tumidicoxoides kurandaensis* Girault (1913b); *Tumidicoxoides paucipunctatus* Girault (1915b); and *Chalcis vegai* Girault (1924).

This is a highly variable species with interstices varying from carinate nature to very wide and smooth spaces. In the unpublished key to Oriental and Palearctic species of *Brachymeria* of Masi, the species *dipterophaga* has been shown to be a distinct species different from *podagrica* in having red basal tergite of gaster. I examined one specimen from Papua New Guinea which fitted well to the original description of *dipterophaga* Girault. In this specimen I did not find an inner basal tooth and the red hind femora (Fig. 287) is without a yellow mark at apex.

Host: Sarcophagidae, Calliphoridae, Synanthropic Diptera, secondarily parasitic on Lepidoptera through Diptera.

Distribution: Widespread from India to Australia with World-wide distribution.

Material examined: Several hundreds of specimens from India and other South East Asian Regions.

29. *Brachymeria bengalensis* (Cameron)

Chalcis bengalensis Cameron 1897:39, F. INDIA, Barrackpore (BMNH) (examined)

The known synonyms are: *Stypiura variabilis* Mani (1936); *Brachymeria yasumatsui* Habu (1963) and *Brachymeria scrobatae* Joseph, Narendran and Joy. This is a common species of India. The red colour of femur is often variable in this species, sometimes with black patches of varying size on the disc and rarely the red is completely replaced by black with apex yellow.

Host: *Earias vitella* (= *fabia*) Fabricius

Distribution: All over Oriental Region and Japan.

Material examined: Several specimens from all over India and Oriental Region with one female from *Earias vitella* in Bihar.

30. *Brachymeria kassalensis* (Kirby)

Chalcis kassalensis Kirby 1886:36, M. AFRICA, Kassala (BMNH) (examined)

Brachymeria bengalensis pulchellae Joseph, Narendran and Joy, 1972g: 422-424, F. INDIA, New Delhi (IARI) *syn. nov.*

This species resembles *B. bengalensis* (Cameron) very closely. However it differs from *bengalensis* in having the gaster distinctly longer than thorax; first tergite of gaster shagreened and hind coxa with an inner ventromesal tooth.

Hosts: *Chaerocampa* sp. (Sphingidae), *Earias* sp. (Noctuidae), *Sylepta derogata* Fab. (Pyralidae), *Utetheisa pulchella* Linnaeus (Arctiidae)

Distribution: India and Africa.

Materials examined: Apart from the Primary types : 3M.3F. INDIA, New Delhi, H.Khan, vi.1946.

31. *Brachymeria albicrus* (Klug)

Chalcis albicrus Klug 1834:39, F. Erthree, (ZMHU).

Chalcis amphissa Walker 1846:83, M. NEPAL (BMNH) (examined) **syn.nov.**

Pseudochalcis indica Mani 1935 is a synonym of *B.albicrus* (Narendran 1986) Though I have not seen the type of *albicrus* I could find out the synonymy with *amphissa* by studying a homotype of ~~*amphissa*~~ *albicrus*. I cannot separate the two on any clear-cut characters.

Hosts: *Anaphaeis aurata* Fabricius (Pieridae), *Earias* sp. (Noctuidae).

Distribution : India.

Material examined: Apart from primary types : 1 F. INDIA, Karnataka, Joseph&Lal , 2.x.1968 . 1 F. Coimbatore. K.B., 27.vi.1927. 2 F. Kerala, Malabar, Joseph&Party, 28.x.1969.

32. *Brachymeria margaroniae* Joseph, Narendran and Joy

Brachymeria margaroniae Joseph, Narendran and Joy 1973: 108, M. INDIA, Tamil Nadu, Salem (DZCU)

B.(B.) josephii Husain and Agarwal, 1982: 507, F. INDIA, Uttar Pradesh (ZDAMU) (examined) **syn. nov.**

This is very close to *B. jayaraji* Joseph, Narendran and Joy but differs from it in having area below scrobe with a median smooth raised portion, in having apex of scutellum wide and slightly emarginate (in *jayaraji* apex of scutellum narrow and not emarginate). This species has been found parasitising *Diaphania* (= *Margaronia*) *indica* in Malabar. It shows a drilling action with its ovipositor while ovipositing on the pupa. *B. josephi* cannot be separated from *margaroniae* on specific characters.

Distribution: India, Vietnam & Philippines.

Materials examined: Apart from holotype: 4F. INDIA Kerala, C.U. Campus, Narendran, 11.vi.1971. 12.vi.1972 from *Margaronia indica*. 1 M. 1F. PHILIPPINES, H. Holtmann, 6—7.v. 1962. 1F. VIETNAM, Yoshimoto, 8-16.xi. 1960. In addition I have seen a few other specimens from Malabar.

33. *Brachymeria jayaraji* Joseph, Narendran & Joy

Brachymeria jayaraji Joseph, Narendran and Joy 1972e: 49, F. INDIA, Madurai (DZCU)

The Indian *jayaraji* comes very close to Persian *Brachymeria persica* Masi and to African *Brachymeria lissostoma* (Cam.) (Comb.nov.)

Host: *Melanitis ismene* Guenee (Nymphalidae). *Pelopidas mathias* Fabricius (Hesperiidae), indetermined Lymantriidae.

Materials examined: Apart from holotype: 1M. 5 F. from Madurai and 3F. from Karnataka.

34. *Brachymeria rufotibialis* Husain and Agarwal

Brachymeria (Matsumurameria) rufotibialis Husain & Agarwal, 1982b: 501, F. INDIA, Aligarh (ZDAMU) (examined).

Brachymeria nigricorporis Husain and Agarwal, 1982: 505, F. INDIA, Lakhimpore (ZDAMU) (examined) syn.nov.

This species is extremely close to *B. jayaraji* except for colour of hind tibia being reddish with subbasal and apical yellow patches. In some specimens gaster also becomes red. This species may prove to be just an extreme form of *jayaraji*, after studying more material. However the type of *nigricorporis* is nothing but a variant form of *rufotibialis* beyond doubt.

Host: *Diacrisia obliqua* Walker (Arctiidae).

Distribution: India.

Materials examined: Apart from the types: 6 F. INDIA, Kerala, Narendran and Party, 1986-1987. 1F. INDIA, Calcutta, S.K.Gupta, 27.vii. 1982. 1F. Uttar Pradesh, Aligarh, M.Hayat, iii. 1983.

35. *Brachymeria carinata* Joseph, Narendran and Joy

Brachymeria carinata Joseph, Narendran and Joy, 1970b:22, F. INDIA, Calicut (DZCU)

Brachymeria shansiensis vietnamensis Joseph, Narendran and Joy., 1972f: 348, M. ("F.") VIETNAM (RNHL) **syn.nov.**

Brachymeria (Neobrachymeria) ghanii Joseph, Narendran and Joy 1973:196F. INDIA (USNM) **syn.nov.**

My later studies have revealed that *shansiensis vietnamensis* and *ghanii* are variations of *carinata* from which they cannot be separated on clear-cut specific characters.

Host: Hyperparasitic on Psychid.

Distribution: India, Vietnam, Hongkong (new record), Sabah, (N.Borneo).

Materials examined: Apart from the two holotypes: 5 F. Kerala Coll. Narendran & Party, 11.vi. 1986 . 2 F. INDIA, Delhi, R.Saram, 27.xi.1949. 2F. Calcutta, collector & date of collection unknown. 1F. VIETNAM, C.M. Yoshimoto, 8.xi.1960. 2F. VIETNAM, Gayden, 12-28. xii. 1963. 1F. PHILIPPINES, Torrevilas, 17. v. 1965. 1M. 1F. Kerala, Narendran, 1985 from Psychid pupa.

36. *Brachymeria hime* Habu

(Figs. 288, 289)

Brachymeria hime Habu, 1960: 199, F. JAPAN (NIAS)

This species resembles *Brachymeria secundaria* Ruschka in colour and appearance but differs from it in having frons with scrobe distinctly reaching front ocellus and in having well developed preorbital carina.

Host: *Grapholitha molesta* Busck (Tortricidae), *Naphoteryx eugraphella* (new record)

Distribution: India, Nepal, Hongkong, Philippines, Taiwan, Vietnam, Japan.

Materials examined: 1F. INDIA, Nagpur, Coll. Unknown, 1946, 1F. PHILIPPINES, M. Thompson, 19 iv. 1962. 1F. PHILIPPINES,

H.Holtmann, 22.v.1962. 2F. INDIA, Punjab, K:C.,4.viii.1958. 2F. Delhi, Mukerjee, 23.vii.1938. 1M, Delhi, H.L.Rathan, 10. viii. 1940. 1F. Delhi, G.Ullah, 8.viii. 1937. 2F. Bihar, coll.unknown, 7.viii. 1906. and 24.i.1916.

37. *Brachymeria atteviae* Joseph, Narendran, & Joy, (stat.n.)
(Figs. 290,291)

Brachymeria hime atteviae Joseph, Narendran and Joy, 1972b:556,
F. INDIA. Neepa Nagar (FRI)

Brachymeria hime attevae (misspelling) Joseph, Narendran, Joy, 1973:123

After the publication of this species as a subspecies of *Brachymeria hime* Habu, several hundreds of specimens were studied by me. These were found parasitising *Opisina arenosella* Walker in Malabar. This species closely resembles *B.hime* Habu, but is a different species with hind tibia and femur with more prominent yellow patches (Fig. 290) as in *nosatoi* and with longer pointed gaster. The fifth tarsal segment is distinctly 3x as long as wide (2x in *B. hime*). Further, frons has denser pubescence in this species than in *B.hime*.

Host: *Atteva fabriciella* Swed. (Yponomeutidae), *Hapalia machaeralis* Walker (Pyrilidae), *Opisina arenosella* Walker, *Corcyracephalonica* S. from pine borer pupa from Philippines.

Distribution: India, Philippines (new record), Malaysia.

Materials examined: Apart from the holotypes and paratypes several hundred specimens from the coconut growing tracts of Malabar. and about 2000 specimens collected from *Atteva fabriciella* in Dehra Dun. 1F. PHILIPPINES, Mindanao, Baker, 1927. 1F. SUMATRA, collector unknown, July 1953. 1F. Kuala Lumpur, L.S. Krauss, x. 1964.

38. *Brachymeria longiscaposa* Joseph, Narendran & Joy

Brachymeria longiscaposa Joseph, Narendran & Joy. 1972b:343—345,
F. TAIWAN (BBM)

This species has the same colouration of *B.hime* Habu but differs from it in having scrobe not at all reaching front ocellus,

in having scape distinctly longer than segments four to seven combined and in having a distinct raised median smooth area below scrobe.

Hosts: Unknown.

Distribution: Taiwan and Vietnam.

Materials examined: Holotype and paratypes only.

39. *Brachymeria wiebesina* Joseph, Narendran and Joy

Brachymeria wiebesina Joseph, Narendran and Joy, 1972d: 35, F. BRITISH BORNEO (BBM)

This species is widely distributed in Malabar. In the holotype, hind tibia is pale blackish brown with a yellowish patch at tip and at base. The basal yellowish patch often becomes in distinct in several specimens. This can be confused with *Brachymeria olethria* Waterston but can be separated by the charactes used in the key above.

Host: Sweet—potato beetle pupa.

Distribution: India, British Borneo, Vietnam, Thailand, Philippines and Singapore.

Materials examined: Apart from Holotype: 26 F. INDIA, Kerala, Narendran and Party, 1985—1987. 1F. PHILIPPINES, M. Thompson, 28.iv. 1962. 1F. PHILIPPINES, T.C.Maa, 1.iii. 1960. 2F. VIETNAM, N.R.Spencer, 7.viii. 1961. 1F. Bihar, U.Bahadur, 10. ix. 1915.

40. *Brachymeria secundaria* (Ruschka)

Chalcis secundaria Ruschka 1922: 227, F. WEST EUROPE (?MCSG)

Brachymeria tauriensis Masi is a synonym of this species. This is a parasite of some Hymenoptera through Lepidoptera (For details refer Host-parasite index).

Distribution: India, Philippines, Japan and Europe.

Materials examined: 1F. PHILIPPINES, H.M.Torrevillas, 12.vi. 1964. 1F. of the same data except 29.iv. 1964. 4F. Coimbatore (date and collection unknown). 1F. INDIA, 1958, Ex. pot.

41. *Brachymeria shansiensis* Habu

B. carinata shansiensis Habu, 1961:80, F. CHINA, Kaolochea (ELKU)

This comes very near to *B. carinata* in general appearance but differs from it in having relatively shorter gaster, hind tibia with a median reddish black band and in having eyes pubescent.

Host: Unknown.

Distribution: India, and N. China.

Materials examined: 1F, INDIA, Coimbatore, 21.x. 1929 coll. unknown.

**42. *Brachymeria shillongensis* Joseph, Narendran and Joy (stat.n)
(Fig. 292)**

Brachymeria hattoriae shillongensis Joseph, Narendran and Joy, 1972c:29 (BMNH).

This species differs from the Japanese *hattoriae* in having postorbital carinae branched; scape completely black (whereas in *hattoriae* it is brown or dark brown at dorso-apical area and with a rather small elongate yellowish brown patch at ventral inner area; height of malar space a little less than one-third height of eye (whereas in *hattoriae* malar space a little less than 1.5x height of eye). Interstices on thorax rugose in *shillongensis* whereas in *hattoriae* it is not so. Area below scrobe without a smooth convex area.

Host: Indetermined pupae of hairy caterpillar on forest trees.

Distribution: India.

Materials examined: Apart from holotype: 1F. specimen from Calicut University Campus, collected by Narendran & Thresia, 1987.

**43. *Brachymeria croceogastralis* Joseph, Narendran & Joy
(Fig. 293)**

Brachymeria croceogastralis Joseph, Narendran and Joy, 1972e:2425, F. INDIA, Bangalore (BMNH).

This is very close to *B. semirufa* in having similar colouration of gaster and hind femur. However this species differs from *semirufa* in having apex of scutellum emarginate. Postorbital carina well developed and not branched and in having black colouration of hind tibia (Fig. 293) characteristically larger (about one-third of hind tibia).

Host : *Perina nuda* Fabr. (Lymantriidae)

Distribution : India.

Materials examined : Holotype and paratypes: 5F. INDIA, Tamil Nadu, Coimbatore, Coll.B.V.David & Natarajan, 1975.

44. *Brachymeria semirufa* Walker

(Fig. 294)

Chalcis semirufa Walker, 1871:48, M. BURMA, Moulmein (BMNH) (examined).

This species can be separated from the closely related *croceogastralis* by the characters given above under that species.

Host : *Papilio agamemnon* (Papilionidae)

Distribution : Vietnam, Burma, Malaya, Singapore (new record)

Materials examined : Apart from primary types: 1 F. MALAYA, Kuala Lumpur, G.H. Corbett, 27.xi.1924. 2F. SINGAPORE (new record) C.F. Baker, 1927.

45. *Brachymeria megaspila* (Cameron)

(Fig. 295)

Chalcis megaspila Cameron, 1907b: 581, F. INDIA, Abu (BMNH) (examined)

The known synonyms are: *Chalcis koebelei* Crawford (1910) and *Chalcis poema* Girault (1927). This species resembles very closely the Palearctic *Brachymeria femorata* (Panzer) from which it can be separated by characters mentioned in the key. *Brachymeria ornatipes* (Cameron) is a known synonym of *Brachymeria femorata*.

Host : *Delias* sp. (Noctuidae), *Eurema blanda silhetana* Wall. (Pieridae). *Eurema hecabe* Linnaeus (Pieridae).

Distribution : India, Vietnam, Java, Japan, Australia.

Materials examined : Apart from Holotype, about 50 F. and 22 M. from Kerala and Karnataka. 1F. BOMBAY, J. Dejaulle, 1919. 2F. VIETNAM, A. Krempt, 1911. 3F. VIETNAM, A. D. Cooman, 1927. 1F. Coimbatore, K. C. M., 2.vii.1930. 1F. Coimbatore, Ponniah, 26.xi.1913. 1F. JAVA, collector & date of coll. unknown.

46. *Brachymeria aurea* (Girault)

Chalcis aurea Girault 1915b: 321 ? F. QUEENSLAND (QMB)

Brachymeria auratopubescence Joseph, Narendran & Joy, 1972:345, F. PHILIPPINES (BBM) *syn. nov.*

The only known synonym of this species is *Chalcis delli* Girault (Boucek, 1988). During my study stay at BMNH, I examined specimens of *Brachymeria aurea* and found out that *auratopubescence* is a synonym of *aurea*. However in the Australian specimen the golden pubescence is much more thicker and larger than the Oriental specimens. In many specimens the black colour of hind femur extends completely over disc leaving a small apical yellow spot.

Host : *Delias argenthona* (Pieridae)

Distribution : Philippines, Java, Burma (new record), Sulawesi (new record) and Australia.

Materials examined : Apart from Holotype and paratype: 2M. and 9F. PHILIPPINES, C. F. Baker, 1927. 1F. Singapore, C. F. Baker, 1927. 1F. from Burma and 1F. from Sulawesi were also examined.

47. *Brachymeria nigritegularis* Joseph, Narendran and Joy (Fig. 296)

Brachymeria nigritegularis Joseph, Narendran & Joy, 1972a: 50, F. PHILIPPINES (RNHL)

This species is known only from Philippines. It has a characteristic long scutellum (Fig.296) with a long median unpitted area.

Host : Unknown.

Distribution : Philippines.

Materials examined : Apart from holotype: 1F. PHILIPPINES, Baker, September, 11-16, 1927. 1F. PHILIPPINES, L.B.Uachanie, 6. viii.1925.

48. *Brachymeria inermis* (Fonscolombe)

Chalcis inermis Fonscolombe 1840:187: ?F. FRANCE (?MNHN)

The only known synonym of this species is *Chalcis punctulata* Forster (1859). In male under side of the funicle with trichoid sensillae as in the case of *B.lasus* and other few species.

Hosts : *Cassida nebulosa* Linn. (Chrysomelidae), *Cassida nobilis* Linn. (Chrysomelidae), *Cassida rubiginosa* Muller *Cassida rugosopunctata* Motsch. and *Metritona thais* (Boheman).

Distribution : Asia minor, Europe, Oriental Region and Japan.

Materials examined: A few identified specimens present in BMNH.

49. *Brachymeria excarinata* Gahan

Brachymeria excarinata Gahan, 1925: 90, F. PHILIPPINES, Luzon (USNM) (examined)

Brachymeria apantelesi Risbec 1956:806, F.M. GAORUA (MNHN)

Brachymeria excarinata plutellae Joseph, Narendran and Joy 1972c: 19, M. INDIA, Karnataka (BMNH)

From the descriptions and homotypes examined, I could find out that *excarinata plutellae* is the same as *apantelesi*. I have not seen the primary types of *apantelesi* but from the homotype studied I feel that it is a variant form of *excarinata*.

Host: Eleven species of Lepidoptera often parasitic on Braconidae (*apanteles* species including *plutellae*) also attacks *Calopepla leayana* (Coleoptera:Cassididae) in Kerala as a primary parasite.

Distribution : Widely distributed in Oriental Region, Egypt, Japan and China.

Materials examined : Several hundreds of specimens from India and other parts of Oriental Region.

50. *Brachymeria phya* (Walker)

Chalcis Phya Walker, 1838: 471, F. SYDNEY, NSW (BMNH) (examined)

Through the kindness of Dr. E.C.Dahms, I could examine the syntypes male and female. The syntypes are in extremely poor condition. According to Dr. E.F.Rick *Tumidicoxella plutellophaga* Girault (1921) is a synonym of *B.phya* Walker. Now I hereby confirm this synonymy. This species is characterised by distinct pre and postorbital carinae; apex of scutellum rounded; scrobe reaching front ocellus; first gastral tergite faintly shagreened, interstices on thorax narrow and rugose.

Hosts : *Plutella maculata*, *Plutella xylostella* (Linn.) Yponomeutidae)

Distribution : India (Cherian & Basheer, 1938; Pruthi and Mani 1946) and Australian region.

Material examined : Apart from primary types a few specimens present in BMNH.

51. *Brachymeria olethria* (Waterston)

Chalcis olethria Waterston, 1914:257, M. S. NIGERIA, Ibadan (BMNH) (examined).

Brachymeria raoi Joseph, Narendran and Joy, 1972:21, F. INDIA, Karnataka, Bangalore (BMNH) *syn. nov.*

The species *B. raoi* cannot be separated from *olethria* on specific characters.

Hosts: *Pyroderces simplex* Wism. (Tineidae), *Sylepta derogata* (Fab. Pyralidae).

Distribution: Africa and Oriental Region.

Materials examined: Apart from primary types: 1 F. ex larva *Alucita* on batatas, Bogor, vii.1953. 1M. parasitic on vit. pop. v. *Amathusia*, Maart, 1929, Boior, Dr.S.Leefman, JAVA (new record). 2F. VIETNAM, Yoshimoto, 14.x.1960. 1F. N. BORNEO, T.C. Maa, 1959. 1F. Hongkong, Lee and Hui, 3.ix.1965.

52. *Brachymeria atridens* (Waterston)

Chalcis atridens Waterston, 1922:56, F. INDIA (BMNH) (examined).

In this species the hind leg colour is quite characteristic, hind femora is completely red or ferruginous with a dark spot externally towards base (it is possible the colour may be reduced or absent in extreme forms). In one instance, the black colour of the hind femur has been found to extend to a larger area of the disc leaving only one-fourth portion as red at apex.

Host: Indetermined Tachinidae.

Distribution: India.

Materials examined: Apart from holotype: 1 F. from IMPHAL (Manipur) from tachinid.

53. *Brachymeria alternipes* (Walker)

Chalcis alternipes Walker, 1871: 49, M. HongKong (BMNH) (examined).

This species resembles *atridens* in general appearance but differs from it in having very weak or indistinct preorbital carinae. Hind femora without any patch and scrobe distinctly reaching front ocellus.

Host: Unknown.

Distribution: South China and India.

Materials examined: Apart from holotype: 1 F. with incomplete collection data from Coimbatore is also examined.

54. *Brachymeria apicicornis* (Cameron)

Oncochalcis apicicornis Cameron 1911:3, F. (BMNH) (examined)

Brachymeria apicicornis Joseph, Narendran and Joy, 1973:174 (misspelling for *apicicornis*)

Diagnostic features of this species are: Pre and postorbital carinae indistinct; interstices on thorax narrow and dull; for other features the key given in this monograph may be referred.

Host: Unknown.

Distribution: Java, Borneo, India (new record), Sulawesi (new record).

Materials examined: Apart from primary types: 2F. INDIA Bihar (new record) 1909. 1F. Sri Ganga Nagar (new record) (Coll. and date of collection unknown).

55. *Brachymeria jambolana* Gahan

Brachymeria jambolana Gahan, 1942:41, F. INDIA (USNM) (examined)

This species is extremely close to *Brachymeria euploeae* but differs from it only in the structure of the antenna (see key above). Gaster is more ovate and subacute in this species.

Host: *Carea subtilis* Walker (Noctuidae), *Danus* sp. (Nymphalidae), *Papilio agamemnon* (Linn.) (Papilionidae)

Distribution: India.

Materials examined: Apart from the types: A few specimens collected from Kerala.

56. *Brachymeria carbonaria* (Zehntner)

Chalcis carbonaria Zehntner, 1906:164, F. ? (BMNH)

I could not examine the holotype of this species but several specimens determined as this species (by Gahan & Burks) present in the USNM, were studied by me. This species comes very close to

B. hearseyi (Kirby) in colour, but differs from it mainly in having preorbital carinae absent.

Host: Unknown.

Distribution: Java.

Materials examined: Some specimens present in USNM.

57. *Brachymeria prodeniae* (Ashmead)

Chalcis prodeniae Ashmead, 1904a: 136, Lectotype F. (USNM) (examined).

This is an extremely small species (1.5mm length) which resembles *B. excarinata* very closely, except for the distinct preorbital carinae.

Host: *Prodenia* sp.

Distribution: Philippines.

Materials examined: Apart from the types: a few specimens present in the USNM.

58. *Brachymeria taiwana* (Matsumura)

(Fig. 297)

Chalcis taiwana Matsumura, 1910:85, Lectotype F. FORMOSA (EIHU),

This is a widely distributed species in Oriental Region. The upper margin of the clypeus (Fig. 297) is fused with the frons completely. Preorbital carinae vestigial or absent. Interstices on scutellum wider than diameter of pit; apex of scutellum rounded. Gaster subglobose, first tergite smooth.

Host: Unknown.

Distribution: All over Oriental Region.

Materials examined: Several specimens from Oriental Region including India, Vietnam, Java, Taiwan and 1F. from Island of Penang, PHILIPPINES, (new record) collected by C.F. Baker, 1927.

59. *Brachymeria criculae* (Kohl)

(Fig. 298)

Chalcis criculae Kohl 1889:80 F. INDIA, Ranchi (NMV)*B. (B) hydrabadensis* Husain and Agarwal, 1982:107, F. INDIA, U.P. (ZDAMU) (examined) **syn. nov.**

A redescription of this species is published by Joseph, Narendran and Joy (1973). In this the hind femur is orange red with distal tip yellowish; the maximum width of hind tibia is 3x its minimum width. The species *hydrabadensis* cannot be separated from *criculae* on specific characters.

Host: *Metanastris hyrta* Cramer (Lasiocampidae) of Wild silk worm *cricula* sp. (Saturniidae).

Distribution: India, Burma (new record) and Philippines and Singapore (new record).

Materials examined: 3F. BURMA, M.H.Desai & J.C.M.Gardner 2—25.ii. 1939. 1F. SINGAPORE, C.F.Baker, 1927. 1F. INDIA, Coimbatore, coll. unknown. 1.viii. 1914 (Det.A.B.Gahan). 1F. INDIA, Andhra Pradesh, Joy, March 1970. 1F. PHILIPPINES, Krausse, March 1958. 1F. Chatterjee, 25.i.1939.

60. *Brachymeria ryukyuensis* Habu

Brachymeria (Matsumurameria) ryukyuensis Habu 1963:115, F.JAPAN, Ryukyu Island (ELKU)

This resembles *Brachymeria taiwana* except for the colour of hind tibia which is dark reddish brown with a rather small whitish patch at subbasal area and moderately large whitish patch at apical area (patch is not reaching ventral carina on outer side). Habu's description (1963) is good enough for identification of this species.

Host: Unknown.

Distribution: Japan, Philippines, India (Kerala) and Andaman & Nicobar Island

Materials examined: India, Kerala, Parambikulam and Peechi (Narendran & Party, 1985). 1F. PHILIPPINES, Thompson, 28.iv.1962.

61. *Brachymeria nitida* Joseph, Narendran and Joy
(Fig. 299)

Brachymeria (Matsumurameria) nitida, Joseph, Narendran & Joy, 1973
190, F. N. BORNEO (BBM)

This species has extremely minute (unusually small) pits on mesoscutum and scutellum. The upper margin of clypeus fused with frons on both sides. The middle unfused part do not form any tubercle as in *achterbergi*.

Host: Unknown.

Distribution: N. Borneo (Sabah).

Materials examined: Known from holotype only.

62. *Brachymeria nosatoi* Habu
(Fig. 300)

Brachymeria (Neobrachymeria) nnosatoi Habu, 1966a: 23. F. JAPAN
Ishigaki Island (ELKU).

This species comes very close to *B. atteviae* in almost all features but differs from it in having the gaster 1.5x length of thorax and epipygium much longer than sixth tergite.

Host: *Dioryctria splendidella* H-S (Pylalidae), *Evetria crystata* W. (Pylalidae), *Opisina arenosella* (Oecophoridae), and *Pectinophora gossypiella* S. (Gelechiidae).

Distribution: India, Laos, Philippines Japan and Papua New Guinea.

Materials examined: Several hundreds of specimens from the coconut growing tracts of Kera'la and Tamil Nadu. A few specimens from Papua New Guinea.

63. *Brachymeria marginiscutis* (Cameron)

Oncocalcis marginiscutis Cameron, 1907c:168, F. INDIA (BMNH)
(examined).

This resembles the *Matsumurameria* group in having trichoid sensillae on ventral side of hind coxae and subglobose gaster but

differs clearly in having a distinct clypeus with upper margin not fusing with frons. The other diagnostic features are: preorbital carinae faintly developed; postorbital carina not reaching genotemporal margin, apex of scutellum rounded, scutellum with an unpitted median smooth longitudinal area.

Host: Unknown.

Distribution India

Materials examined: Apart from primary types, a dozen females and a few males from Kerala collected by Narendran & Party during 1985—1987

64. *Brachymeria rufescens* (Cameron)

Oncochalcis rufescens Cameron 1906: 95, F. PAKISTAN, Quetta (BMNH) (examined).

This is a distinct species with head and body mostly reddish (see key above). Pre and postorbital carina absent; area below scrobe with a smooth raised portion; first tergite of gaster smooth; scrobe and scape reach front ocellus.

Host: Unknown

Distribution: Pakistan and India (new record)

Materials examined: Apart from lectotype the following: 1F. INDIA, Kerala, Paroppady (Nr. Calicut), Narendran & Party, 25.viii. 1987.

65. *Brachymeria hayati* sp. nov.

(Figs. 301—303)

Female: Length 5.06 mm. Black; eyes and ocelli blackish brown; apices of fore femora, bases and apices of fore tibiae and fore tarsi pale yellow; mid legs concolorous with fore legs; hind femora completely black without a tan or yellow spot at apex; hind tibia black with a distinct subbasal yellow spot and an apical yellow patch; hind tarsi yellow with apices black; tegulae pale brownish yellow.

Forewing hyaline with veins blackish brown. Head 1.26x as broad, equal to maximum width of thorax; pre and postorbital carina well developed; scrobe smooth and shiny reaching front ocellus; POL 3x OOL; antennae (Fig. 301) with scape not quite reaching front ocellus. Thorax with close umbilicate pits; interstices half as broad as diameter of pits on median region of scutellum, less than half of diameter of pits on other regions; interstices rugulose on most of the regions; apex of scutellum (Fig. 302) bilobed. Forewing with relative measurements submarginal: 148, marginal: 60, postmarginal: 18 and stigmal: 10. Apical fringe present. Hind femur (Fig. 303) without an inner basal tooth. Gaster suboval in shape, a little longer than thorax, first tergite less than half length of gaster, smooth and shiny, posterior margin straight; second tergite shiny and slightly shagreened on dorsal side, posterior margin moderately emarginate; third to fifth tergite smooth and shiny on proximal half, distinctly shagreened on distal half; sixth tergite rugosopunctate. Epipygium and ovipositor well visible from dorsal side.

Holotype: F. INDIA, Uttar Pradesh, Aligarh, M. Hayat 27.xii.1984, (DZCU).

Remarks: This species comes near *Brachymeria fiskei* (Craw.) in general appearance but differs from it in having distinct subbasal yellow colour on hind tibia, marginal vein a little shorter than submarginal; postmarginal about one-third marginal; hind femur 1.92x as long as broad and scape longer than combined lengths of segments four to six.

66. *Brachymeria achterbergi* sp. nov.

(Figs. 304-307)

Female: Length 4.54-4.59mm. Black; tegulae, apices of femora, all tarsi, all tibiae (except black base of hind tibiae) yellow; eyes and ocelli pale yellow; pubescence pale brownish on thoracic notum and silvery on other regions. Head width equal to maximum width of thorax; frons densely pubescent especially on ventral half; anterior margin of clypeus (upper margin) fused with frons on both sides anterior middle margin, thus forming a raised tubercle (Fig.

304); preorbital carinae absent; postorbital carinae distinct, not quite reaching genotemporal margin; relative measurement of POL : 21, OOL:10. Antenna (Fig.305) with scape almost reaching front ocellus. Thorax with extremely small pits on mesoscutum and scutellum (Fig. 306), each pit with a long hair, interstices much broader than diameter of pits, polished and shiny on scutellum; apical margin of scutellum slightly emarginate; propodeum with median areola deep, lateral teeth moderately developed. Forewing covered densely with minute brown pubescence, apical fringe present; relative proportion of veins: submarginal: 130, marginal: 89, post marginal 26 and stigmal: 14. Each hind coxa with an unusually large tubercle on (Fig.307) inner ventral side, densely pubescent; hind femur length 1.72x its width, densely pitted with a minute seta on each pit, interstices smooth and shiny, without an inner basal tooth. Gaster subglobose, a trifle longer than thorax; first tergite smooth and polished on dorsal side, posterior dorsal margin straight, second tergite pubescent on sides with an irregular row of scattered minute pits on anterior margin, large remaining dorsal region smooth and faintly shagreened; sixth tergite almost perpendicular, densely pitted and pubescent. Epipygium and ovipositor sheath not visible from dorsal side.

Holotype : F. MALAYSIA, S.W.Sabah, C.V Achterberg, 1-14.iv. 1987 (RNHL). *Paratype* : F. same data as that of holotype.

Remarks : This is a remarkable species with an unusual large tubercle on ventromesal region of hind coxa and in having characteristic long pubescence on thoracic notum.

67. *Brachymeria surekae* sp.nov.

(Fig.308-309)

Female : Length 6.79mm. Black; scape, pedicel, ring segment, tegulae, legs except fore and hind coxae and lateral sides of first to fifth gastral tergites, hypopygium and preceding three segments; hind femora with a blackish tinge on median portion of disc; pubescence silvery; wings with a brownish tinge; eyes and ocelli brownish black. Head 1.37x as wide as long, subequal to maximum width of thorax; preorbital carina indistinct; postorbital carina very faintly indicated;

scrobe reaching front ocellus. Antenna (Fig.308) with scape almost reaching front ocellus, with long pubescence on inner sides towards apex and on outer ventral margin. Relative measurement of POL:37, OOL:13.5. Thorax with close pits, interstices narrow, carinate and rugose; apex of scutellum very slightly emarginate when viewed from dorsal side. Propodeum with lateral teeth not distinct; forewing with relative measurements of veins: submarginal: marginal: postmarginal: stigmal: 150:65:21:12. Hind coxa without any ventromesal tooth; hind femur 9.37x as long as wide, without an inner basal tooth, disc minutely pitted and pubescent, outer ventral margin with a row of twelve teeth. Gaster (Fig.399) a little longer than thorax; first tergite a little more than half of gaster, with two characteristic patches of pubescence (one on each side) as in figure 309; sixth tergite rugosopunctate and pubescent. Ovipositor sheath not quite visible from dorsal side.

Holotype: F. INDIA, Bengal, H.L.Dutta, 16.iv.1910 from *Danus chrysippus* L. (Nymphalidae).

Remarks: This species comes close to *Brachymeria indica* (Krausse) in general appearance but differs from it in having characteristic conspicuous patches of pubescence on first tergite of gaster, in having first tergite of gaster distinctly longer than the length of gaster (whereas in *Brachymeria indica* it is distinctly shorter than length of gaster) legs without brown or black patches, hind femur on outer side with about 12 teeth and parasitic on *Danus chrysippus* pupa. This species also resembles *Brachymeria megaspila* (Cameron) but differs from it in having length of club equal to its width and different colour of legs. It differs from *B.amphissa* (Walker) in having postorbital carinae present and in several other features.

68. *Brachymeria manjerica* sp.nov.

(Figs. 310-311)

Female: Length 2.98-3.07mm. Black; eyes and ocelli pale yellow; tegulae and all tarsi immaculate yellow; fore trochanters reddish brown, fore femora reddish brown with apices yellow; fore tibiae and fore tarsi yellow; mid legs concolorous with fore legs; hind femora

black with apex yellow; hind tibia reddish brown with distinct subbasal and apical immaculate yellow. Epipygium, gasteral segments third to fifth rufous. Wings hyaline and veins brown. Head (Fig.310) width equal to maximum width of thorax; pre and postorbital carinae absent. Antenna (Fig.311) with scape not reaching front ocellus. Thorax with mesoscutum convex; punctures close, interstices carinate and rugose; apex of scutellum broadly rounded, propodeum without lateral teeth. Forewing with relative measurements: submarginal :125, marginal:60, postmarginal:26 and stigmal:10. Hind coxa without a ventromesal tooth; hind femur 1.69x as long as broad. mat-like, without an inner basal tooth, outer ventral margin with a row of twelve teeth, basal tooth larger. Gaster somewhat oval, distinctly shorter than thorax, first tergite smooth and shiny, not shagreened, a little more than half length of gaster, second tergite microsculptured, sparsely pubescent on sides, third to fifth tergites rugosopunctate and pubescent. ovipositor sheath visible from dorsal side.

Holotype: F. INDIA, Kerala, Manjeri, Narendran & Party, 11.viii.1987 (DZCU). *Paratypes*: 1F. INDIA, Calcutta, Salt Lake area, S.K.Gupta, 1-5.vi.1982 (DZCU).

Remarks: This comes near *B. rufotibialis* H. & A. in colour of hind tibia and in several other features but differs from *rufotibialis* in having first tergite of gaster smooth, shiny and impunctate and in having scape not reaching front ocellus,

69. *Brachymeria salinae* sp. nov.

(Figs. 312-314)

Female: Length:2.78 -3.29mm. Black: eyes blackish brown, ocelli pale brown; tegulae brown basally and yellow apically, fore coxa liver brown, fore femur liver brown with apex yellow; fore tibia liver brown with base and apex yellow; fore tarsi yellow, mid legs concolorous with fore legs; hind femur black with apex yellow; hind tibia brownish black with a subbasal and apical yellow patches; hind tarsi yellow. Forewing subhyaline with brownish pubescence, veins brown. Head (Fig.312) a little wider than maximum width of thorax,

frons convex; vertex broad; pre and postorbital carinae well developed; relative measurement of POL:32; OOL:12. Antenna (Fig. 313) with scape not reaching front ocellus. Thorax with close, shallow pits; each with a minute hair, interstices smooth and shiny, as broad as diameter of pits on median region of scutellum and posterior median region of mesoscutum, on rest of regions less than diameter of pits; apex of scutellum as in figure 314. Forewing with relative measurements of submarginal : 153; marginal : 55, postmarginal : 12 and stigmal : 11. Hind coxa with a distinct tooth on ventromesal part; hind femur length 1.68x its width, outer disc mat like, inner basal tooth absent, outer ventral margin with eight teeth with first proximal tooth largest. Gaster distinctly shorter than thorax; first tergite occupying distinctly more than half length of gaster, shiny, posterior margin slightly emarginate; second tergite smooth and shiny with faint shagreening and very few sparse pits on dorsolateral sides; sixth tergite rugosopunctate.

Male: Similar to female except for stouter antenna and shorter gaster.

Holotype: F. INDIA, Kerala, Sultan's Battery, Narendran and Party, 19.9.1985. *Paratypes:* 3 M. same data as for holotype. 1F. Kerala, Vythiri, Narendran & Party, 18.ix.1985. 1F. Kerala, Calicut, Narendran & Party, 17.ix.1985. 1F. Kerala, Feroke, Narendran & Party, 27.ii.1985. All types in DZCU.

Remarks: This species resembles *Brachymeria coxodentata*, *Brachymeria tapunensis* and *Brachymeria porthetrialis* but differs from all of these species in having distinct and well developed preorbital carinae and in having scrobe not at all reaching front ocellus in addition to several other features.

70. *Brachymeria ambonensis* sp. nov.

(Figs. 315-317)

Female: Length: 4.2-4.39mm. Black; antennae, gaster (except second tergite dorsally), basal portion of hind femur, a spot at apex of hind femur, fore leg, ventral side of coxa and tegulae rufous.

All tarsi yellow, hind tibia black with apex yellow. Wings hyaline. Pubescence whitish. Head width 1.29x its length, subequal to maximum width of thorax with distinct, deep, close pits, interstices carinate except on area below antennal toruli where interstices wider than diameter of pits and smooth. Pre and postorbital carinae well developed; scrobe reaching front ocellus; relative measurement of POL:15, OOL:6. Antenna as in figure 315. Thorax with pits shallow, distinctly umbilicate and close on mesoscutum, interstices ecarinate; interstices on scutellum carinate with distinct longitudinal carinae as in figure 316. Propodeum perpendicularly declined, forewing with relative measurement of veins:postmarginal:9, marginal:32, submarginal:68, stigmal:4. Hind coxa without a ventromesal tooth; hind femur without an inner basal tooth, outer ventral margin as in figure 317. Gaster subglobose, distinctly shorter than thorax, first to third tergite smooth and shiny on dorsal side; fourth and fifth sparsely pubescent; sixth tergite shallowly punctate and moderately pubescent. Ovipositor sheath not visible from dorsal side.

Holotype: F. INDONESIA, Ambon Island, A.M.R. Wegner, 4.xii.1962 (RNHL).

Paratypes F. Same data as for holotype except date: 18.xii.1960.

Remarks: This resembles *Brachymeria croceogastralis* J.N.J. and *B. semirufa* (Walker) in general appearance. However it differs from them in having 1) distinct preorbital carinae, 2) longitudinal carinae on scutellum 3) shape of scutellum and nature of thoracic sculpturing different and colour pattern on hind leg and antenna differ.

UNPLACED SPECIES

I could not ascertain the identities of the following species, because either the primary types could not be examined or the available primary types were extremely in poor condition so as to enable to find out their identities. In such cases their original description were very inadequate to recognise the respective species.

71. *Brachymeria sociator* (Walker)

Chalcis sociator Walker 1862: 356, F. SARAWAK (BMNH?)

The following are the relevant points taken from the original description of Walker. *Female*: Length 6.35 mm. Black; hind femora

with yellow tips; tibia streaked above with black. Forewing with marginal vein half length of submarginal; postmarginal much less than half length of marginal. Antennae stout, subclavate, shorter than thorax; apex of scutellum unarmed. Gaster elliptical, a little shorter but hardly narrower than thorax.

Host: Unknown.

Distribution: Sarawak.

72. *Brachymeria kuchingensis* (Cameron)

Oncochalcis kuchingensis Cameron 1911: 3, F. BORNEO, Kuching (BMNH?)

The following are the main points taken from the original description of Cameron. *Female*: Length 4mm. Black; the tegulae, apex of femora, tibiae and tarsi bright lemon yellow; base of hind tibiae and greater part of the lower part blackish; mandible ruqous; pubescence on face dense and silvery. Hind coxae smooth and bare above, rest closely punctured and covered with white pubescence.

Host: Unknown.

Distribution: Borneo (Kalimantan)

73. *Brachymeria tarsalis* (Motschulsky)

Chalcis tarsalis Motschulsky 1863:40, F. CEYLON (ZMMS)

The species *Chalcis ashmeadi* Schmied. 1906 is a known synonym of *tarsalis*. The following account is based on the original description of Motschulsky and short taxonomic notes supplied by Dr. V. Trjapitzin.

Female: About 3.18mm. Similar to the colour of *Brachymeria nephantidis* Gahan. Head broader than pronotum and as broad as or a little less broad than mesonotum. Pre and postorbital carinae indistinct (?). Apex of scutellum rounded. Hind femur with an inner basal tooth. Gaster subconical with first tergite smooth and shiny.

Host: Unknown.

Distribution: Sri Lanka.

74. *Brachymeria javensis* (Girault)

Chalcis javensis Girault 1919:53, ?F. JAVA (?BMNH)

The following is an account given by Dr.B.D.Burks (pers. comm.); antennae red. Trochanters and femora red except apices of femora which are lemon yellow. Hind tibia lemon yellow with base black. Pubescence grey, relatively dense on apex of scutellum, on frons below antennae, on hind coxae, on cheeks, on metapleuron and on venter of gaster. Conspicuously golden pubescence present on abdominal tergites two to six. Head with front ocellus its own diameter away from scrobe. Thorax with apex of scutellum entire. Forewing with postmarginal over twice the stigmal.

Host: Unknown.

Distribution: Java.

75. *Brachymeria ludlowae* (Ashmead)

Chalcis ludlowae Ashmead 1904b:13, F. M. Luzon (USNM) (examined)

This species represented by a male and a female cotypes which certainly are not the same genus. Both specimens are broken. The female lacking head, the male being partially crushed so that its form is distorted. The male belongs to the genus *Trigonura* while the female may be *Brachymeria* but without the head it is difficult to decide about it.

Host: Unknown,

Distribution: Philippines.

76. *Brachymeria compestris* Husain and Agarwal

B.(B.) compestris Husain and Agarwal, 1982b:506, F. INDIA, Uttar Pradesh (ZDAMU) (examined).

I could examine the holotype of this species which lacked head and hind legs, hence I am unable to determine its real identity.

Host: Unknown.

Distribution: India.

77. *Brachymeria indica* (Krausse)

Meyeriella indica Krausse 1916:93-94, F. INDIA, Trichinopoly
(? ZMHU)

The following are the main features of the species mentioned in the original description: *Female* Length 6.5mm. Black; scape, pedicel, ring segment, tegulae brown; legs reddish brown with dark brown to black spots on femora. Pubescence white. Head a little wider than its length; antennae with scape not reaching front ocellus; relative measurement of length of segments from fourth onwards: 6.5, 7.5, 7.7, 6.5, 6.5, 5.9. Thorax with apex of scutellum weakly emarginate; pits on notum close and interstices narrow. Forewing with relative measurement of veins: submarginal:30, marginal:13, postmarginal:5, stigmal:3. Gaster with first tergite distinctly less than half of gaster.

Host: Delias eucharis Dury (Pieridae)

Distribution: India (Tamil Nadu),

78. *Brachymeria bicolorata* Kohar, Qadri & Ahmed

Brachymeria bicolorata Kohar, Qadri & Ahmed, 1971:261, F.
PAKISTAN, Karachi, Sind (ZMUKP)

The original description is extremely confusing for identifying the species. While in the description it is stated that scrobe reaches front ocellus, in the figure it is shown as not at all reaching front ocellus; the hind tibia colour is also found shown in two pattern (Fig. 1A and 1H of Kohar et al 1971) ! The description of the remaining parts are also extremely inadequate. A request for loan of types remained unanswered.

Host: Earias insulana and *E. fabia* (Noctuidae)

Distribution: Pakistan.

79. *Brachymeria oblique* Ahmed, Malik and Ahmed

Brachymeria oblique Ahmed, Malik and Ahmed, 1985: F. PAKISTAN,
Sind (ZMUKP).

Two spellings '*oblique*' and '*obliqua*' have been found in the original paper for this species. Since the description is extremely inadequate for identification of the species and a request for the loan of types remained unanswered, I am unable to ascertain the identity of this species.

Host: Unknown.

Distribution: Pakistan.

80. *Brachymeria multidentata* Ahmed, Malik and Ahmed

Brachymeria multidentata Ahmed, Malik and Ahmed, 1985:90, F. PAKISTAN, Sind (ZMUKP).

From the inadequate original description and drawings, I feel that this species probably belonged to Haltichellinae and not *Brachymeria*.

Host: Unknown.

Distribution: Pakistan.

81. *Brachymeria alba* Sheikh, Malik and Ahmed

Brachymeria alba Sheikh, Malik and Ahmed, 1985:171, F. PAKISTAN, Karachi (ZMUKP).

This species probably is also not *Brachymeria* but a Haltichelline as far as I could gather from the crude figures and inadequate description.

Host: Unknown.

Distribution: Pakistan.

82. *Brachymeria mandibulata* Sheikh, Malik and Ahmed

Brachymeria mandibulata Sheikh, Malik and Ahmed, 1985:173, F. PAKISTAN, Karachi (ZMUKP)

The type could not be examined as request for it remained unanswered. The original description did not help in ascertaining the identity of this species.

Host: Unknown.

Distribution: Pakistan.

83. *Brachymeria dentata* Rafi, Malik and Ahmed

Brachymeria dentata Rafi, Malik and Ahmed, 1985:185, F.
PAKISTAN, Mirpur (ZMUKP)

The remarks under *mandibulata* above is applicable to this species also.

Host: Unknown.

Distribution: Pakistan.

84. *Brachymeria kafimu* Rafi, Malik and Ahmed

Brachymeria kafimu Rafi, Malik and Ahmed, 1985:187, F.
PAKISTAN, Mirpur, (ZMUKP).

The remarks under *mandibulata* is applicable to this species also.

Host: Cotton-boll worms.

Distribution: Pakistan.

NOTE

According to Rafi et al (1985) and Sheik et al (1985) the two species *Brachymeria truncatella* Burks (1966) (replacement name for *truncata* Burks, 1960) and *Brachymeria incerta* (Cresson) are American and Cuban species respectively. The identities of these species recorded from Pakistan needs scrutiny and comparison of specimens with the relevant type specimens.

39. Genus *DIRHINUS* Dalman

(Figs. 318-337)

Dirhinus Dalman 1818:75-76, Pl.2. Type - species. *Dirhinus excavatus* Dalman by monotypy.

The known synonyms of the genus are *Eniaca* Kirby (1883b) *Dirrhinoidea* Girault (1912), *Pareniaca* Crawford (1914b), *Eniacella*

Girault (1914), *Eniacomorpha* Girault (1915b), *Dirhinoides* Masi (1947). All these names were placed in synonymy by Burks (1936) except *Eniacomorpha* Girault which is synonymised by Boucek and Narendran (1981). Members of this genus are mostly parasites of Calliphoridae, Sarcophagidae, Muscidae and also of certain Tephritidae. They are found in Asia, Australia, Americas and Europe.

KEY TO ORIENTAL SPECIES OF *DIRHINUS* DALMAN

(Modified from Boucek & Narendran, 1981)

1. Head below apex of each horn without distinct additional teeth, sides of scrobe almost straight or sinuate (Fig.328) (sub.gen. *Dirhinus*)..... 2
- Head on facial edge of each horn with distinct additional tooth (Figs.323, 326, 327, 332), (in *brevidentata* facial horn extremely small) (sub.gen. *Pareniaca*)9
2. Apex of each horn in dorsal view more or less rounded without any notch (Fig.318); body with rather sparse punctation; on thorax; wings hyaline, without distinct pilosity in female hind tibia in distal half with another shallow groove outside tarsal sulcus, this groove delimited by additional external carina **HIMALAYANUS** Westwood
- Each horn outside of apex with a distinct notch (Fig.320); body with dense and closer punctures than in alternate; forewing pilosity usually distinct; hind tibia without additional sulcus if such sulcus present then clava asymmetric.....3
3. Thorax dorsally not depressed, scutellum at least slightly convex (in profile) and extensively punctate and if with a smooth area in middle, then this area separated from apical margin by at least two rows of puncta; mesosternal area with distinct close carina bordering cavities for full coxae.....4
- Thorax dorsally unusually flattened (Figs.321, 322), especially scutellum, scutellum completely flat and with broad impunctate area separated by single row of puncta from hind margin, mesosternal area without distinct carina delimiting smoother part where fore coxae adhere..... 8

4. Hind tibia with an extra sulcus outside tarsal one; in female apex of short antenna (Fig.319) very broad and clava obliquely depressed on one side owing to large area of micropilosity; preclaval segment about 2.5x as broad as long; in male antenna clavate, second flagellar segment (first after anellus) 1.1-1.6x as long as broad, the seventh 0.6—0.7x as long as broad **CLAVIGER** Boucek & Narendran
 — Not as above.....5
5. Scutellum anteriorly with a median impunctate strip (Fig.329); posterior margin of striate area on first tergite nearly straight; median areola of propodeum with convex sides; each horn in dorsal view at level with anterior eye margin broader than scrobal gap (as broad as that in some dwarfs).....6
 — Scutellum without impunctate strip; median areola of propodeum more elongate than in alternate with almost parallel or subparallel sides; striate area on first tergite narrower than long with hind margin not straight but with fewer striae produced in middle (Fig.330); each horn in dorsal view at anterior ocular line slightly narrower than scrobal gap except in *secundarius*.....7
6. Anterior and dorsal (inner) edge of horn (Fig.320) converging in acute to right angle, anterior and lateral edges forming acute angle of about 60°; antennae, fore and mid legs testaceous or rufous; antennae of female thick; striae on first gastral tergite reaching only one-third of length.....**ANTHRACIA** Walker
 — Anterior and dorsal edges of horn in right to obtuse angle, anterior and lateral edges in nearly right angle, the horn therefore is rather obtuse; feelers of female more slender, striae of first tergite reaching above two-fifths of length.....
 **HESPERIDUM** (Rossi)
7. Each horn in dorsal view at anterior ocular line slightly narrower than scrobal gap, median areola of propodeum almost parallel sided..... **AURATUS** Ash.
 — Each horn in dorsal view at anterior ocular line not narrower than scrobal gap; median areola of propodeum not parallel sided**SECUNDARIUS** Masi

8. Thorax in lateral view (Fig.321) about 1.4x as high (at scutellum) as length of metapleuron; second flagellar segment in female distinctly transverse, pedicel dorsally about 1.5x as long as broad; flagellum more clavate.....**BANKSI** Rohwer
- Thorax still more flattened in lateral view (Fig.322) only about 1.1x as high as metapleuron, long; second flagellar segment in female as long as proximally broad, flagellum less clavate.....
.....**DEPLANATUS** Boucek & Narend.
9. Anterior inner edge of frontal horn (Fig.327) crinulate and with an additional tooth on outer edge: facial tooth strong; antenna with spatulate club (Fig. 327); gastral tergite with weak short striae; posterior median area of pronotum depressed with an impunctate shagreened area.....**ALTICORNIS** Masi
- Not as above.....10
10. POL raised to form a ridge, dorsal side of thorax flattened (Fig.335); propodeum long (Figs. 335, 336) with median areola long, first tergite of gaster without striae
.....**SURESHANI** sp.nov.
- Not as above, characters partly or completely different.....11
11. Horn very short; frontal tooth extremely short, not at all projecting, petiole 1.57x as long as broad (Fig.332); base of first tergite with submedian carinae short, half as long as sublateral carinae.....**SALINAE** sp.nov.
- Not as above; characters partly or completely different.....12
12. Tip of horn in lateral view not or hardly jutting out farther away from eye margin than strong frontal tooth (Fig.326), latter often nearer to horn tip than to eye margin, striae of striate area of first tergite strong even posteriorly and extending over more than one-third of tergite; body size over 4 mm....
.....**MADAGASCARIENSIS** Masi
- Tip of horn reaching much farther from eye (Fig.323) than frontal tooth, latter much weaker and smaller, striae on first tergite weaker and shorter (sometimes very much short) than in alternate 13

13. Forewing pubescence reduced, especially with no hairline recurrent from stigmal or if a hairline partly developed (some males) then petiole atleast slightly transverse, in female, area of four carinae on petiole 1.5 to 2x as broad as long; dense striae on first tergite forming broad area with convex hind margin and taking up more than quarter of tergite length**BAKERI** (Craw.)
- Forewing with distinct hairline recurrent from stigma towards wing base (Fig.324), petiole in both sexes longer than in *bakeri* but striate area of first tergite usually shorter.....14
14. Striae on first tergite forming distinct though transverse area15
- Striae on first tergite strongly reduced, very short; petiole longer than in alternate with area of four carinae nearly 3x as long as broad in middle in male; horns high in lateral view, spinen like (Fig.325).....**ALTISPINA** Boucek & Narend,
15. Petiole in female moderately transverse; area of four carinae subquadrate; in male 1.3 to 1.5x as long as broad; scape normal, not inflated, horns short dorsally, not very narrow, in lateral view very broad (Fig.323).....**PILIFER** Boucek & Narendran
- Petiole in female virtually as long as broad in middle with the area of four carinae fully 1.4x as long as broad; the males with scapes inflated.....**BROWNI** (Craw.)

Unplaced in the key for want of details:

1. *Dirhinus pusillus* Masi
2. *Dirhinus dives* Masi
3. *Dirhinus linearis* Masi
4. *Hontalia caeruleiceps* Cameron

1. *Dirhinus himalayanus* Westwood

(Fig.318)

Dirhinus Himalayanus Westwood, 1836: pl.10, 840: liv.F. INDIA, Uttar Pradesh, Dehra Dun (? lost)

Dirhinus lakhimpuriensis Husain and Agarwal, 1981b: 191, M, INDIA, Uttar Pradesh, Lakhimpur (ZDAMU) (examined) **syn. nov**

Other known synonyms are : *D. crythroceras* Cameron (1906), *D. luzonensis* Rohwer (1923), *D. luciliae* Rohwer (1923), *D. pachycerus* Masi (1927), *D. vlasovi* Nikol'skaya (1952), *Dirhinoides mathuri* Mani and Dubey (1972).

The single male holotype of *lakhimpuriensis* comes from the state Uttar Pradesh (North India) from where the type of *himalayanus* is believed to have come. The type *lakhimpuriensis* is found to be clearly the same species *himalayanus* beyond doubt. A detailed description of the species is given by Boucek and Narendran (1981).

Hosts: *Chrysomya megacepala* (Fab.) (Calliphoridae), *Hypantiria cunea* Drury (Lep.) (Arctidae), *Lucilia* spp. (Calliphoridae), *Musca domestica*, Linn. (Muscidae), *Sarcophaga* spp. (Sarcophagidae), *S. tuberosa* *Lucilia cuprina* Wiedemann (Calliphoridae).

Distribution: Saudi Arabia, Iraq, Turkmenia, Pakistan, India, Malaysia, China, Philippines, Japan, Cocos Island, Sumatra and Hawaii.

Materials examined: Type of *lakhimpuriensis* and material examined by Boucek and Narendran (1981). Additional material examined: 1F. Hongkong, Grassitt, 1950, 1F. INDIA, Kerala, Calicut University Campus, Narendran 1981. 1F., INDIA Kerala, Vallikunnu, Narendran and Thresiamma 30. vii. 1987. 1F. INDIA, Mysore, Narendran & Party, 30. vi. 1987. 1F. INDIA, Calicut University Campus, Narendran and Thresiamma 1985 1F. INDIA, Calcutta, Salt Lake, S.K. Gupta, 23. vi. 1982. 1F. INDIA, Calcutta, Salt Lake, S.K. Gupta, April, 1981 1M. INDIA, Kerala, Nilambur, Sudheendran, 1982. 1M. INDIA, Uttar Pradesh, Aligarh. M. Hayat, 14. iv. 1979. 1M. INDIA, Uttar Pradesh, M. Hayat, v. 1980. 1M. INDIA, Uttar Pradesh, Aligarh. M. Hayat, 12. iv. 1981. 8F. Bihar, Mayr, 1915.

2. *Dirhinus claviger* Boucek and Narendran

(Fig. 319)

Dirhinus claviger Boucek and Narendran, 1981: 237, F. INDIA, New Delhi (BMNH)

Dirhinus clavatus Husain and Agarwal, 1981:185, F. INDIA, Aligarh, (ZDAMU) (examined) **syn. nov.**

I examined the type of *clavatus* and found that it is the same species as *claviger*. Since the paper containing the description of *claviger* was published (July 1981) and reprints posted three months earlier than the paper containing the description of *clavatus*, by law of priority the name *claviger* should be considered as a valid name and the name *clavatus* as its synonym.

Host: Unknown.

Distribution: India, Sri Lanka.

Materials examined: Apart from holotype and paratypes 1F. INDIA, Uttar Pradesh, Aligarh, M.Hayat, 30.x.1983. 2F. INDIA, Kerala, Nilambur, Narendran and Party, 11. viii.1987. 1F. INDIA, Tamil Nadu, Sugar Cane Res. Inst., Naerndran & Party, 28.ix.1987. 1M. INDIA, Aligarh, Uttar Pradesh, Verma, xi.1979.

3. *Dirhinus anthracia* Walker

(Fig. 320)

Dirhinus Anthracia Walker, 1846: 7,85, M. PHILIPPINES, (BMNH) (examined).

Dirhinus aligarhensis Husain and Agarwal, 1981b:183F. INDIA, Aligarh (ZDAMU) (examined) **syn. nov.**

Dirhinus ignobilicornis Husain and Agarwal, 1981b:187, F. INDIA Aligarh, (ZDAMU) (examined) **syn. nov.**

?*Dirhinus sinon* Fernando W. 1957:214, syntypes 2M. Eastern Province, Puanui (? lost).

Other known synonyms are : *Eniacella ruficornis* Girault (1913d), *Eniacella bicornuticeps* Girault (1915b), *Dirhinus sarcophagae*, Froggat (1919), *Dirhinus frequens* Masi (1933), *Dirhinus intermedius* Mani and Dubey (1972), *Dirhinus georgei* Mani and Dubey(1974) and *Dirhinus excavatus* Auctorum Nec. Dalman as misidentification (Boucek and Narendran, 1981).

I examined the type of *aligarhensis* and I cannot separate it from *anthracia* on specific characters. The type of *ignobilicornis* is a female

freak specimen which has a dwarf left frontal horn and a normal right one, otherwise it is the same as *anthracia*. The description of the Ceylonese species *sinon* is extremely poor and reveal not very useful features. However the scant data indicates that *sinon* may be identical with *anthracia*. The types of *sinon* could not be examined inspite of repeated efforts.

Hosts: *Calliphora villosa* R-D (Calliphoridae), *Dacus cucurbitae* Coq. (Tephritidae), *Dacus ferrugineus* F. *Sarcophaga aurifrons* Mac. (Sarcophagidae), *Brachartona catoxantha* Hampson (Zygaenidae), *Plecoptera reflexa* G. (Noctuidae), *Pyrausta machaeralis* W. (Pyrilidae).

Distribution: Africa, Oriental Region, Australian Region and Mediterranean Region.

Materials examined: Over two hundred male and female specimens from Oriental Region.

4. *Dirhinus auratus* Ashmead

Dirhinus auratus Ashmead, 1905:402, Lectotype F. PHILIPPINES, Manila (USNM) (examined)

Dirhinus circinus Husain and Agarwal, 1981b: 182, F. INDIA Aigarh (ZDAMU) (examined) *syn. nov.*

The type of *circinus* is conspecific with *auratus*. *Dirhinus pambaeus* Mani and Dubey (1974) collected from banks of river 'Pamba' in cardamom hill area is a synonym of *auratus* (Boucek and Narendran, 1981).

Host : *Dacus* sp.

Distribution : India, Sri Lanka, Thailand, Laos, Vietnam, Taiwan, Philippines and Pakistan.

Materials examined : 8F. INDIA, Kerala, Kallai, Narendran and Party, 25.v.1987. 1F. INDIA, Tamil Nadu, Coimbatore, Sugarcane Breeding Inst., Narendran & Party, 27 ix.1987. 1M. 1F. INDIA, Tamil Nadu, Sugarcane, Br.Inst.25.ix. 1987. 1F. INDIA, Kerala, Pambikulam, Narendran and Party, 20.xii. 1985. 8F., 9M. INDIA, Kerala, Peechi, Narendran & Party, 29.x.1985. 1F. INDIA, Kerala Calicut. University. Campus, Narendran 17.vii. 1986. 1F. INDIA

Calicut. University Campus, Narendran & Thresia, 3.xi. 1986. 3F., 2M. Narendran & Party, 1985—1986. 1M. INDIA, Kerala, Silent Valley, Narendran & Party, 16.v.1985. 1M. Kerala, Vallikunu, Narendran & Party 30.vii.1987. 1F. INDIA, Kerala, Agricultural University, Trichur, Narendran & Party, 30.x.1985. 1F. INDIA, Kerala, Peechi, Narendran & Party, 29.x. 1985. 1F. Agra, St. John's College, 27.viii.1974. 1F. Calcutta, Salt Lake Area, S.K. Gupta, 2.v.1982. 1F. INDIA, Nilambur, Narendran, v.1985. 1F. INDIA, Mysore, Narendran and Party, 30.i.1987. 1F. INDIA, Malampuzha, 11.xii. 1987. 1F. INDIA, Kerala, C.U. Campus, Narendran *et al*, 20.viii. 1985. 2M. JAPAN, Okinawa, G.E. Bohart 8.x.1945.

5. *Dirhinus banksi* Rohwer

(Fig. 321)

Dirhinus banksi Rohwer 1923:347, F. PHILIPPINES, Manila (USNM) (examined).

In this species horns appear stout and nearly parallel sided in basal half, the highly arcuate inner carinae turning strongly outwards distally, so that tips are apart for 0.75mm distance between eyes. Forewing with hairline recurrent from stigma, traceable for about length of marginal vein.

Host: *Lucilia* sp.

Distribution : India, Sri Lanka, Thailand, Kampuchea, W. Malaysia, Philippines and Japan.

Materials examined: Apart from types: 1F. Thailand, Airawan Dist, R.E. Elbel, 9.vii. 1953; other materials referred in Boucek and Narendran, 1981.

6. *Dirhinus deplanatus* Boucek and Narendran

(Fig. 322)

Dirhinus deplanatus Boucek and Narendran 1981: 244, F. INDIA, Bihar, Dholi (BMNH)

Dirhinus glabratus Roy and Farooqi 1981: 13, F. INDIA, Bihar, Dholi, (IARI) (examined) *syn.nov.*

I examined the holotype of *glabratus* during a visit to IARI and found that *glabratus* is the same species *deplanatus* (Both types come from the same locality also). Since the description of *deplanatus* was published and released much earlier than that of *glabratus* the name *deplanatus* should be taken by law of priority as the valid name.

Host: Unknown.

Distribution : India (Bihar).

Materials examined : Holotypes of *deplanatus* and *glabratus*.

7. *Dirhinus bakeri* (Crawford)

Parenia *bakeri* Crawford, 1914b: 459, F. PHILIPPINES, Manila (USNM) (examined).

The only known synonym of this species is *Parenia trichophthalma* Masi (1927). The name *bakeri* was recombined as *Dirhinus* (from *Hontalia bakeri* Crawford) by Baltazar (1966). Habu (1960, 1962) classified this species as *Dirhinus* (*Hontalia trichophthalmus* Masi) and redescribed it.

Hosts : *Sargus metallinus* (F.) (Stratiomyiidae); *Musca domestica* L. (Muscidae) and *Ptychomyia remota* Ald. (Tachinidae) *Dacus incisus* (new record).

Distribution : India, Sri Lanka, Malaysia, Philippines and Japan.

Materials examined: Apart from type of *bakeri* and other materials mentioned in Boucek and Narendran (1981): 8F. INDIA, Kerala, Peechi, Narendran & Party, 29.x.1985. 2F. INDIA, Kerala, Calicut, Narendran, 16.ix.1985. 2F. INDIA, Agriculture Uni., Narendran and Party, 30.x.1985. 1F. INDIA, Calicut, Narendran & Party, 17.ix.1985. 2F. INDIA, Kerala, Vallikunnu, Narendran & Party, 31. viii. 1987. 1F. Kerala, Kallai, Narendran & Party, vi.1987. 1F. INDIA, U.P. Aligarh, M. Hayat, 14.x.1984. 1F. Kerala, Parappanangadi, Narendran & Party, 26.viii. 1987. 3F. Kerala, Sultan's Battery, Narendran and Party, 19.ix. 1985. 1F. Karnataka, Mysore, Narendran and Party, 10.viii.1987. 1F. Kerala, Calicut, University Campus,

Narendran 24.x.1986. 1M. Kerala, Calicut University Campus, Narendran, 28.x. 1986. 1M. Kerala, Malampuzha, Narendran and Party, 11.xii.1987. 1M. Tamil Nadu, Coimbatore, Sugarcane Breeding Institute, Narendran and Party, 28.ix.1987. 1M. Neyyar Wild Life Sanctuary, (Kerala), M.S.Mani & Party, 22. viii.1974. 1M Kerala, Nilambur, Narendran & Party, 11.viii.1987. 1F. Sri Lanka, N.L.Krausse, 1957. 1F. Coorg (Karnataka) from *Dacus incisus*, Beevor & Lawrence, iv.1950. 1F. JAPAN, Okinawa, W.D. Field, 6.ix. 1945. 1F. Sikkim, G.W.Anralat, 2.ix. 1957. 1F.Serdang, Selangore, F.M.S. Pemberton.

8. *Dirhinus pilifer* Boucek and Narendran

(Figs.323,324)

Dirhinus pilifer Boucek and Narendran, 1981:246, F. SRI LANKA (BMNH)

Very similar to *Dirhinus bakeri* but can be separated by the characters mentioned in the key. Inner dorsal carinate margin of horns not raised medially (raised high in *bakeri*). Thorax more finely and densely punctate than in *bakeri*. Axillar furrows convergent at about 90° (over 90° in *bakeri*).

Host : Unknown.

Distribution : India, Sri Lanka, Borneo (new record) and Philippines, (new record).

Materials examined : Apart from holotype and paratype: 1 M. Philippines, Basilan C. F.Baker, 1927. 1 M. B.N.Borneo, Kalabakan, L.W.Quate, 18-19.x.i1958.

9. *Dirhinus browni* (Crawford)

Parenia browni Crawford, 1914b: 457-464, F. PHILIPPINES (USNM) (examined)

Closely resembles *Dirhinus pilifer* but differs mainly in having horns higher and petiole in female virtually as long as broad in middle with the area of four carinae fully 1.4x as long as broad. The males have scape inflated.

Host : Unknown.

Distribution : Philippines and Malaya (new record)

Materials examined : Apart from the type: 1F. MALAYA, Selangore, N.L.H.Krausse, viii.1948.

10. *Dirhinus altispina* Boucek and Narendran

(Fig.325)

Dirhinus altispina Boucek and Narendran, 1981: 246, M. SRI LANKA (USNM)

The original description of this species is based on a single male from Sri Lanka. I have examined two females from Philippines which are conspecific with the type and similar to male; petiole a little longer than its maximum width; basal carinae on first tergite short but distinct, not well developed.

Host : Unknown.

Distribution : Sri Lanka, Philippines (new record).

Materials examined : Apart from holotype, 2F. PHILIPPINES, Baker, 1927.

11. *Dirhinus madagascariensis* (Masi)

(Fig. 326)

Parenia *madagascariensis* Masi 1947:74, Lectotype F. MADAGASCAR (MNH).

The only known synonym of this species is *Parenia coromandelica* Mani and Dubey (1974). A detailed redescription of the species is given by Boucek and Narendran (1981).

Host : *Sylepta derogata* (Fab.) (Pyrilidae), probably as a hyper parasite via Tachinidae.

Distribution : Senegal, Africa, India, Thailand, Japan (new record)

Materials examined: Apart from the type(*coromandelica*)and other materials: 1F.INDIA, Kerala, Calicut University Campus, Narendran

and Party, 9.iii.1987. 1F. INDIA, Kerala, Kallai, Narendran and Party, June 1987. 1F. INDIA, Kerala, Chaliyam, Narendran and Party, 24.x.1987. 1F. INDIA, Kerala, Narendran and Party, vi.1987. 1F. INDIA, U.P. Aligarh, M.Hayat, iii.1983. 1M. Aligarh, M.Hayat, 17.x.1987. 3M. Kerala, Narendran, 21.xi.1978 and 19.ix.1985. 1M. JAPAN, Okinawa, F.N.Young, 23.vi.1945.

12. *Dirhinus alticornis* (Masi)

(Fig.327)

Pareniaea alticornis Masi, 1927: 42-45, M. PHILIPPINES (MNHN)

This is a remarkable species with peculiar antenna and crenulate inner margin of horns. The species is well illustrated, described and redescribed by Masi (1947). The first gastral tergite is without well defined basal carinae.

Host : Unknown.

Distribution : Philippines.

Materials examined : 1M. PHILIPPINES, Luzon, H.E. Milliron, 29.ix.1945.

13. *Dirhinus hesperidum* (Rossi)

(Figs. 328, 329)

Chrysis hesperidum Rossi 1790: 100, F.? (MNHN)

The known synonyms of this species are: *Chalcis cornigera* Jurine (1807), *Dirhinus imperialis* Girault (1863). Authors like Kirby, Rohwer and Schmiedeknecht misidentified this species. A good redescription of this species is provided by Habu (1960, 1962). It resembles *anthracia* closely but can be separated by the characters mentioned in the key above.

Hosts : *Sarcophaga* and *Musca domestica* (L).

Distribution : Korea, Europe, Africa, Japan, Thailand (new record) and Philippines (new record).

Materials examined : 1F. Thailand, Chom. Thong, R.Hensen,

6.vii.1986. 1M. PHILIPPINES, Zamboanga, Mindanao,
L.D.Brongersma and W.J.R. Oosdrop, 17.viii. 1952. 1F. JAPAN,
Ryukyu Island, Leishma, 12.viii.1945.

14. *Dirhinus secundarius* Masi

(Fig.330)

Dirhinus secundarius Masi 1933: 10,F. TAIWAN (MNHN).

This is a very slender species. The apex of scutellum pointed; interspaces on scutellum fairly narrow; antennal scape a little shorter than segments two to six together. A good redescription of this species is provided by Habu (1960, 1962).

Host : Unknown.

Distribution : Taiwan and Japan.

Materials examined : I have not examined any specimens of this species. The information given on this species above is based on the available literature on it.

15. *Dirhinus linearis* (Masi)

Parenia linearis Masi 1927: 42-45, F.M. PHILIPPINES,? (MNHN)

This species comes near to *alticornis* (according to Masi, 1947) but differs from it in having linear horn; preorbital corner in profile sub-vertical to eyes; median areola of propodeum terminating posteriorly at an acute angle and antenna rufotestaceous.

Host: Unknown.

Distribution: Philippines.

Materials examined: Nil. The above account on this species is based on the available literature.

16. *Dirhinus pusillus* Masi

Dirhinus pusillus Masi, 1927, F. PHILIPPINES (MNHN).

In this species the maximum width of horn at level of eye

from vertex is broader than scrobal gap. Relative measurements of POL to OOL is 4:3. Frontal horns similar to that of *anthracia*. Antennal anellus transverse. First tergite of gaster with 8—12 carinae.

Host Unknown.

Distribution: Philippines

Material examined: Nil. The information given above on this species is based on the available literature.

17. *Dirhinus dives* Masi

Dirhinus dives Masi 1927:47, M. PHILIPPINES (MNHN)

The basal width of horn at the level of eyes distinctly wider than scrobal gap; scrobal gap diverging anteriorly; horns similar to *anthracia*. Relative measurement of POL:2, OOL:5. Fourth antennal segment longer than fifth. Club length a little over twice length of preceeding segment. Hind femora 1.8x as long as broad.

Host: Unknown.

Distribution: Philippines.

Materials examined: Nil. The information given on this species is based on the available literature on it.

18. *Dirhinus salinae* sp.nov.

(Figs.331-334)

Female:: Length: 3.86mm; Black; antennae with scape, pedicel and club yellowish brown; fore and mid legs pale brown; hind tarsi pale yellowish; wings hyaline with veins pale yellow; eyes yellowish black; head in lateral view with outline of vertex convex (Fig.332), longest diameter of eye greater than maximum length of gena (40:35); pilosity of eyes not distinct; relative measurements of POL:11, OOL:7. Horns and antennae as in figures 331, 333; thorax densely and closely punctate; interstices narrow and rugose; scutellum slightly wider than long, its apex subangulate, slightly raised; propodeum not very short, median areola convex at sides,

hind corners (on either side of petiole) nearer to each other than metanotum; forewing with apex of marginal vein virtually on margin. Postmarginal vein absent, distinct hairline recurring from stigma to basal side, pilosity in distal third of wing distinct but sparse, hind coxa 1.5x as long as broad; hind tibia without an additional groove on outer side; petiole 1.6x as long as its maximum width. Gaster (Fig.334) length including petiole subequal to length of thorax; first tergite occupying more than three-fourth of gaster. Basal carinae not well developed but distinct.

Holotype: F. PHILIPPINES, Zamboanga, Mindanao, C.F. Baker, 1927 (USNM).

Remarks: This is a unique species with extremely small frontal teeth and with first tergite of gaster occupying more than three-fourths of gaster.

19. *Dirhinus sureshani* sp.nov.

(Figs. 335-337)

Female: Length 8.93 mm; Black; eyes and ocelli yellow, antennae, fore and mid legs brown; forewings hyaline (with yellowish tinge) with veins yellowish. Head (Fig.335) with longest diameter than maximum length of gena (24:20); relative measurements of POL:3; OOL:2. POL is peculiarly raised to form a longitudinal ridge; space between outer and inner edge of horns deep, each horn without a notch at apex; prothorax with a depression in middle, closely punctured, interstices shagreened but smooth, scutellum with a median impunctate strip nearer base, smooth, but shagreened; propodeum unusually long with long median areoli, accessory and sublateral carinae; interstices between carinae reticulate. Forewing with apex of submarginal vein swollen, marginal vein virtually on margin, postmarginal absent, a distinct thick recurrent line from stigma going to basal end for a distance of full length of marginal vein, pilosity very distinct almost all over wing surface, moderately dense. Hind coxa 1.63x as long as width, hind tibia without an additional sulcus on outer side; petiole as long as wide; gaster (including petiole) a trifle longer than

thorax; first tergite a trifle longer than half of gaster, smooth and shiny without basal carinae; sixth tergite, epipygium and ovipositor sheath with a tuft of hairs on either side and on dorsal side, epipygium with a tuft of hairs on either side basally and on cerci; apex of ovipositor sheath with a tuft of hairs.

Holotype: F. INDONESIA, Sulawesi, C.V. Achterberg, 9-15.ix. 1985 (RNHL).

Remarks: This species is quite remarkable in having a lengthy body, long gaster and long propodeum; POL is peculiarly raised and interspace between outer and inner edge of horn with a deep cavity.

UNPLACED TAXA

20. *Dirhinus sinon* Fernando

Dirhinus sinon Fernando 1957: 214, 2M. Syntypes (UC)

All my efforts to procure the types were in vain. It is difficult to make out any worthwhile feature from the poor original description. However from some available clues from this description it seems that this species may be *anthracia* Walker.

Host: Unknown.

Distribution: Sri Lanka.

21. *Hontalia caeruleiceps* Cameron

Hontalia caeruleiceps Cameron 1911: 19, M. BORNEO (BMNH) ?

I have not seen the type/ types of this species. The following are the main points from its original description.

Male: Length: 6mm. Black; antennae, fore and mid legs (except coxae) testaceous; head and thorax densely covered with depressed golden-coppery pubescence; wings hyaline, veins dark fuscous. Head with ocellar region raised; pro and mesothorax with punctures clearly separated; basal segment of gaster almost 2x longer than wide, sides of centre bounded by stout carinae; base of second segment closely and strongly striated in middle; rest of gaster smooth and shiny.

Host: Unknown.

Distribution: Borneo.

40. Genus **APLORHINUS** Masi

Aplorhinus Masi 1924: 244-248. Type-species: *Aplorhinus bakeri* Masi, by original designation and monotypy.

The tribe Aplorhinini was established by Masi (1924) who based it on a single specimen described as *Aplorhinus bakeri* Masi and on an undescribed genus, both from Philippines. According to Masi's description and figures (1924) *Aplorhinus* differs from all Dirhinini in having frons angulately produced forwards but only slightly emarginate at apex, not deeply divided into two horns. Unfortunately Masi's material was subsequently lost and never seen by anybody else. The real affinities of this genus or tribe to Epitranini and Dirhinini can be settled only when some further Aplorhinini are studied.

41. Genus **EPITRANUS** Walker

(Figs. 338-385)

Epitranus Walker, 1834: 21, 26. Type-species: *Epitranus fulvescens* Walker by monotypy.

The synonyms are: *Chalcitella* Westwood (1835), *Anacryptus* Kirby (1883b), *Arretocera* Kirby (1883b), *Neoanacryptus* Girault (1913a), *Chalcitelloides* Girault (1914), *Paranacryptus* Girault (1915b), *Pararretoceroidea* Mani (1938).

Members of this genus are parasitic on moths of Pyralidae and Tineidae. They are distributed in Africa, Asia, Australia and doubtfully Americas (Boucek, 1982a).

Under this genus I have treated here mainly Oriental species though extralimital species are included in the key since these extralimital forms are likely to be encountered in the Oriental Region. The key of Boucek (1982) is slightly modified to accommodate the new species.

KEY TO ORIENTAL SPECIES OF *EPITRANUS* WALKER

(Partly modified from Boucek, 1982a)

1. Propodeum with percurrent median area delimited by distinct submedian carina (Fig.344) or as in figure 362.....2
 - Propodeum without percurrent median area; either with a small and often raised areola followed by a median carina or by several radiating carinae (Fig.383) or anterior areola is followed by another areola or these median areola are replaced by an irregular median keel.....21
2. Tarsal sulcus of hind tibia deep and smooth throughout (Fig 340) clearly reaching subbasal tooth.....3
 - Tarsal sulcus less developed, subbasal tooth of hind tibia often weak or in the form of low hump or even absent; if the sulcus reaches the tooth then its bottom at the tooth is not smooth or it is transverse obliquely by a carina running from outside of tarsal insertion towards mesal side of sub-basal hump (Fig.350)6
3. Head and thorax dull black with sculpture consisting of large irregularly lozenge-like areolae (Fig.339) and where surface dulled by minute yet distinct reticulation; propodeum at petiole also dull. India.....**CHILKAENSIS** (Mani)
 - Thorax coarsely punctate with distinct shiny interstices..... 4
4. Head black; tooth of hind tibia formed by laminate cross carina, (Fig.346)not crenulate; clypeal roof in male very short with narrow median tooth and two broad lobes (Fig.342); median area of propodeum very narrow..... **ATER** Boucek
 - Head mainly reddish; tooth of hind tibia crenulate that is formed by several small teeth (similar to Fig.349) in a crossline, concealed by pilosity; clypeal roof not very short (Figs.346, 348); median area of propodeum broad..... 5

5. Sides of pronotal collar posteriorly with conspicuous and well delimited patch of thick, silvery or slightly yellowish hairs; collar anteriorly with distinct cross-carina which is only narrowly interrupted in middle; head in dorsal view with strongly angulate temples (Fig.345)**IMPULSATOR** Walker
- Pronotum without unusual patches of hair and anteriorly with collar carina broadly interrupted; head stout with almost rounded temples (Fig.348); pilosity on thorax longer and denser than in alternate.....**OBSERVATOR** Walker
6. Hind femur behind basal tooth with a comb or atleast 20 narrow regular teeth (Fig 349); subbasal tooth of hind tibia strong; interspaces of coarse punctures on thorax mainly smooth, also surface of propodeal area rather shiny.....7
- Hind femur with fewer than seventeen teeth which are relatively broader and less regular than in alternate; other characters atleast partly different8
7. Body mainly red brown; eyes large, in dorsal view maximum eye diameter about two-third the breadth of vertex; POL clearly more than twice OOL; India to Japan and West Indonesia..
.....**ALBIPENNIS** Walker
- Head and thorax dorsally black; eyes small, in dorsal view maximum diameter only half distance between eyes; POL subequal to 2x OOL, or less than 2x OOL. New Guinea,Indonesia
..... **NITENS** Boucek
8. Marginal vein indistinct, almost colourless; no recurrent hairline from end of venation; clypeal projection unusually small; hind tibia with a dorsal hump indistinct, tarsal sulcus very short, Solomons.....**OBSOLETUS** Boucek
- Venation distinct , pigmented; other characters atleast partly different9
9. Forewing pilosity strongly reduced, virtually absent, below marginal vein; especially not forming any distinct hairline, recurrent from stigmal vein10

- Wing pilosity extensive atleast in distal half and forming a hairline or even streak directed obliquely basad from apex of stigmal vein (Fig.367).....14
- 10. Propodeum dull with a distinct granulate sculpture, also interstices on thorax (atleast partly) and bottoms of punctures with distinct reticulation; tarsal sulcus on hind tibia extending over more than three-fourths up towards subbasal tooth11
- Propodeum quite shiny in areolae, also thorax shiny, especially not distinct reticulation in punctures; tarsal sulcus reaching only half way to subbasal hump.....12
- 11. Hind tibia with a strong agulate subbasal tooth, crenulate under hairs (similar to figure 349) and tarsal sulcus with distinct oblique carina running from outside of tarsus towards inside of subbasal tooth (Fig.350); propodeal areolae very dull with reticulation but thorax and occiput slightly shiny; in female petiole dorsally flattened and only upto 3x, in male upto 4x as long as broad**CLAVATUS** (Fab.)
- Hind tibia with weak subbasal hump and tarsal sulcus without oblique carinae; propodeum usually slightly shinier than in alternate but occiput (including space between and outside ocelli) and bottoms of thoracic puncta granulate; petiole relatively longer.....**RAMNATHI** (M.& D.)
- 12. Hind femur beyond basal tooth with a row of sixteen small teeth (Fig.354), head (Fig.351) a trifle over 1.5x as wide as long from front view; thorax with large shallow pits (Fig.353), marginal vein clavate..... **PUNCTATUS** sp.nov.
- Not as above, marginal vein at apex distinctly curved into short stigmal vein(similar to fig.385)..... 13
- 13. Clypeal margin three toothed **NIGRICEPS** Boucek
- Clypeal margin rounded to angulate, not toothed... ..
..... **INDICUS** H.and A.
- 14. Forewings with pilosity unusually extensive and with almost regular infumation which is only slightly paler above and below

- centre, clypeal projection in male very small, subangulate (Fig.355); Philippines **PILOSIPENNIS** Boucek
- Forewing pilosity less extensive, infumation different or absent
clypeal projection more conspicuous 15
15. Forewing with two brown cross bands 16
- Forewing hyaline or subhyaline 17
16. Occiput densely rugulose-punctured, dull; interstices on thorax slightly dull due to fine engraved network **BIFASCIATUS** Boucek
- Occiput atleast medially and laterally shiny due to partly smooth interstices of the rather sparse irregular puncturation; interstices on thorax shiny, almost completely smooth **VICINUS** Boucek
17. Frons very convex (Fig.357) when viewed from above; antennae short (Fig.358); frons densely pitted all over (except for a short scrobe) punctures continues with punctures of broad vertex and occiput; small species..... **FRONTUS** sp. nov.
- Characters partly or completely different from above... 18
18. Frons long and narrow towards clypeus (Fig. 360); scrobal carinae almost straight (Fig 360); interstices of pits on thorax rugulose, hind coxa with very sparse pilosity on ventral side; frons with distinct round pits all over (except scrobe), gaster globose (Fig. 364)..... **GLOBOSUS** sp. nov.
- Not as above; features partly or completely different from above 19
19. Frons with very coarse rugulose sculpture reaching down to short scrobal carinae (these converging at 90° from outside each torulus) clypeal roof (Fig.365) longer than in average *erythrogaster*, dorsally forming large shiny boss except for narrow part along margin with few hairs only. N. Borneo **GAULDI** Boucek
- Frons with fairly fine sculpture, scrobal part mainly reticulate to finely cross striate, scrobal carinae converging at

more acute angle and reaching atleast, half way towards ocellus;
clypeal roof more pilose, more extensively concave, duller.....20

20. Malar space with very few hairs; in female antennae unusually short (Fig.366) and stout, flagellum with pedicel combined only 1.1x the head breadth, clava about twice as long as broad; thorax red; Laos **CRASSICORNIS** Boucek

— Malar space hairy; antennae variable but always longer and slender than in alternate, especially clava and flagellar segments longer; thorax usually black, only rarely more or less reddish; India to S. Japan **ERYTHROGASTER** Cam.

21. Head and pronotum red, rest of body mainly black; pronotum and axillae with patches of thick white hairs; collar carinae distinct except medially; hind femur with a comb of more than fifteen fine teeth; propodeum with percurrent median carina; size over 5mm; New Guinea **HASSANI** Boucek

— Head and pronotum black; no white patches on thorax;22

22. Venation incomplete; marginal vein completely colourless; antennae of female with seven segments between pedicel and clava (Fig.368); propodeum with rather shallow subbasal anterior areola; India to Japan **ELONGATULUS** (Motsch.)

— Marginal vein distinctly pigmented, brown; female antenna mostly (except *dorsiplanus* which has flat scutellum) with a distinct annellus followed by seven funicular segments; propodeum otherwise 22

23. In female, eye length in dorsal view much less than half breadth of vertex. in male 0.55 of vertex: clypeal projection short, in female formed by rectangular edge; petiole very long, in female about 6x, in male about 8x as long as broad; forewing with two broad infumations; in male hind femur with large tooth and hind tibia on inside with very long curved hairs; New Guinea **SEDLACEKI** Boucek

— In both sexes eyes much larger, petiole shorter, clypeal projection and other characters different (forewing similar only in *umbripennis*)24

24. Scutellum flattened (Fig. 370) to its apex almost in one plain; body over 3.8mm long, anterior areola of propodeum subtriangular followed by median carina..... 25
 — Scutellum atleast posteriorly convex and if only slightly so (Fig. 372) then body smaller26
25. In female only seven segments between pedicel and clava (as in figure 368); petiole moderately stout, constricted posteriorly; gaster pale ventrally and in a subapical cross-band, wings distinctly brownish; subbasal hump of hind tibia in both sexes with single tooth; New Guinea**DORSIPLANUS** Boucek
 — In female 8 segments between pedicel and clava (Fig. 369); slender petiole (Fig.370), parallel sided; gaster black; wings pale; hump of hind tibia with several teeth in female (Male unknown) Philippines **SUBPLANUS** Boucek
26. Males (last sternite situated at apex, convex or flat, strongly pilose; flagellum filiform or nearly so) 27
 — Females (last sternite plough shaped, removed from apex of gaster, followed by ovipositor sheaths; gastral apex more or less acuminate in profile 31
27. Last sternite medially with broad shiny and mostly flattened or depressed strip, erect hairs on its sides, partly directed mesad; scape not constricted 28
 — Last sternite convex and with rather regular pilosity even in median line, the hairs erect or directed caudad; scape sometimes constricted 29
28. Only last sternite with smooth median strip, the sternite hardly larger than in species without strip; apex of pennis narrowly rounded-subbidentate; India and Vietnam
 **PARVIDENS** (Strand)
 — Last two sternites enlarged and both with median shiny depression, this depression about twice as long on last sternite than on the penultimate sternite (Fig. 375); apex of pennis with two sharp teeth, Philippines..... **STANTONI**(Ashmead)

29. Scape distinctly constricted in distal third (Fig.376), in constriction usually with a row of short hairs; clypeal projection stout in lateral view, subconical; Malaya ...
 **MALAICUS** Boucek
- Scape without strong constriction; clypeal projection much flatter than in alternate 30
30. Wings unusually dark brown, pilosity of forewing fairly dense beyond two-third of marginal vein; flagellum fully 1.35x as long as head breadth; anellus indistinct; propodeum medially with raised 'Y'; New Guinea... .. **ATRIENNIS** Boucek
- Wings not unusually and uniformly dark; if in male wings more infumate (some *umbripennis*) then anterior areola of propodeum emitting two carinae posteriorly and anellus more than 0.3x as long as broad.....31
31. Gaster with epipygium long, longer than half the pre-epipygial part of gaster (excluding petiole) (Fig.382)
 **SALINA** E sp. nov.
- Characters not as above.....32
32. Clypeal projection in lateral view stout, bluntly subconical, its ventral part convex at apex; flagellum with rather long distant hairs (Fig. 377); second segment of flagellum in female slightly longer than pedicel (M. of couplet 29).....
**MALAICUS** Boucek
- Clypeal projection flatter, thinner; in female flagellum with its second segment shorter than pedicel..... 33
33. Forewing infumation present but uneven, forming a broad band below marginal vein and another in distal third, the two separated by subhyaline band constricted in middle; less often mainly pale brown, also gaster with pale lateral oblique band; New Guinea**UMBRIENNIS** Boucek
- Wing infumation, if present, rugulose, without maculae or bands34
34. (Wings unusually dark brown; here probably unknown female of.....**ATRIENNIS** cf.30)
- Wing infumation indistinct or absent35

35. Gaster in female acuminate at apex (Fig.384)
**OXYTELUS** Boucek
- Gaster in female rather blunt at apex (Fig. 373) 36
36. Scutellum in profile usually weakly convex (though often slightly more than in figure 372); thorax in average slightly longer, dorsally (with propodeum combined) about 1.8x as long as broad; gaster of female in lateral view shorter, its apex rather blunt (Fig.373) and first tergite upto 1.5x as long as high; hind tibia in female with rather inconspicuous one or two subbasal teeth; India, Malaya and Vietnam **PARVIDENS** (Strand)
- Scutellum in profile more convex (Fig.374); thorax slightly shorter than in alternate; gaster of female laterally longer, its apex more acuminate and first tergite about 1.8x as long as high; hind tibia in both sexes with fairly strong subbasal tooth; Philippines.....
**STANTONI** (Ashm.)

1. *Epitranus chilkaensis* (Mani)

(Figs. 338-341)

Anacryptus chilkaensis Mani 1936: 127, M. INDIA, Orissa, Barkuda Island in Chilka (ZSI) (examined).

The species is so far known from the single male holotype. I have collected 2F of this species from Malabar. The female resembles the male in diagnostic features as redescribed by Boucek (1982). The antennae and gaster are as in figures 338 and 341. Punctures on thorax is alveolate and most characteristic of this species (Fig.339).

Host: Reared from the nest of *Camponotus compressus* (Fab.)

Distribution: India (Orissa and Kerala, new record for Kerala)

Materials examined: Apart from holotype, 2F. collected from Nilambur reserve forest and Calicut Uni. Campus by Narendran & party in 1985 and 1986.

2. *Epitranus ater* Boucek

(Figs. 342-344)

Epitranus ater Boucek 1982a: 588. Holotype M. LAOS, Phou-kowkui (BBM)

Diagnostic features: Black; antennae except apically, tegulae, fore and mid legs, hind tibiae and tarsi red; wings slightly brownish.

The description of Boucek (1982) is good enough to identify this species. I have not come across this species so far. Boucek (1982) based this species on a single male specimen.

Host: Unknown.

Distribution: Laos.

3. *Epitranus impulsator* Walker

(Figs. 345, 346)

Epitranus impulsator Walker 1862: 348-349. F. ("M".) INDONESIA. Sulawesi (Celebes) Makasar (BMNH) (examined)

The most conspicuous feature of this species: Pronotum with thick patches of decumbent hairs on sides and similar less thick patches on axillae.

Host: *Tirathaba rufivena* (Walker) (Pyrilidae)

Distribution: Kampuchea, Malaysia, Indonesia, Philippines (Boucek, 1982).

Materials examined: Apart from holotype: 3 M. 1 F. PHILIPPINES, Mindanao, C.F. Baker, 1927.

4. *Epitranus observator* Walker

(Figs. 347, 348)

Epitranus observator Walker 1862: 349-350, Lectotype F. UGANDA Sierra Leone (BMNH) (examined)

The known synonyms are: *Anacryptus Bayoni* Masi (1936), *Anacryptus megacerus* Schmitz (1946), *Anacryptus muzaffer* Mani

and Kurian (1953), *Anacryptus shaffii* Mani and Kurian (1953), *Pararretoceroidees coomaraswamyi* W. Fernando (1960).

Head red; thorax black as in *impulsator*, not dense pubescence on sides of pronotum and on axillae and head without angulate temples.

Host: Unknown.

Distribution: India, Africa, Sri Lanka, Thailand and Malaysia (Boucek, 1982).

Materials examined: Apart from lectotype 1 F. Bengal, Chapra, Coll. Mackenzie, date: unknown. 1 F. SRI LANKA, P.B. Karunaratne, 8.vii. 1970 (BSRI).

5. *Epitranus albipennis* Walker

(Fig. 349)

Epitranus albipennis Walker in Smith 1874: 400, Holotype F. JAPAN, Hyogo (BMNH) (examined).

Epitranus perticellus Husain and Agarwal, 1981c: 419, F. INDIA, Uttar Pradesh, Aligarh (ZDAMU) (examined) **syn. nov.**

Epitranus kashmiriensis Husain and Agarwal, 1981c: 421, F. INDIA, Jammu and Kashmir, Sri Nagar (ZDAMU) (examined) **syn. nov.**

Other known synonyms are: *Anacryptus japonicus* Ashmead 1905) *Anacryptus koebelei* Ashmead (1904a), *Anacryptus flavipes* (Cameron (1911), *Anacryptus rufinus* Masi (1933), *Anacryptus sontakayi* Mani and Kurian (1953), *Anacryptus marattensis* Mani and Dubey (1973),

I examined the holotypes of *Epitranus perticellus* and *Epitranus kashmiriensis* and found them to be the same as *albipennis*.

Host: The species *perticellus* was stated to be obtained from "ex *Euzophera perticella* Rag. (Pyralidae) on *Solanum melongena* L." by Husain and Agarwal (1981).

Distribution: India, Malaysia, Indonesia, S. China, Taiwan, Philippines and Japan.

Materials examined: Apart from types: 16 F. 17 M. INDIA, Kerala, Narendran & Party, 1985-1987. 3 F. 2 M. W. Bengal, Calcutta,

S.K.Gupta, 1981-1982. 1F. Andhra Pradesh, Tenali, Narendran & party 1985. 1F. Taiwan, Wu-Feng, H.Townes, 14.iv.1983. 3 F. PHILIPPINES, C.F.Baker, 1927. 1M. BORNEO, C.F.Baker, 1927.

6. *Epitranus nitens* Boucek

Epitranus nitens Boucek, 1982a:592, F. PAPUA NEW GUINEA (BBM)

Boucek described this species based on a single female specimen collected by J.&M. Sedlacek from Papua New Guinea. I could examine 5 F.specimens collected by Dr.C.V.Achterberg from Indonesia. In three of these specimens the reddish colour has extended to funicle, base of hind coxa, parts of head, and part of gaster. Otherwise they fit to the original description fully. This is first record of this species from Oriental Region.

Host: Unknown.

Distribution: Indonesia (new record) and Papua New Guinea.

Material examined: 5 F. INDONESIA, Sulawesi, C.V.Achterberg, xi.1985, 11.iii.1987

7. *Epitranus clavatus* (Fabricius)

(Fig.350)

Chalcis clavata Fabricius 1804:162, Lectotype M. SOUTH AMERICA (Guyana) (UZM).

The known synonyms are: *Epitranus fulvescens* Walker (1834) *Epitranus lacteipennis* Cameron (1883). *Anacryptus insidiosus* Masi (1917), *Anacryptus anpingius* Masi (1933), *Anacryptus cawnporensis* Mani and Dubey (1973).

Boucek (1982) have discussed the synonymy as well as information on type in his revision. This species resembles *Epitranus ramnathi* in general appearance but differs from it in having strong angulate subbasal tooth on hind tibia with crenulate under hairs and in having tarsal sulcus with distinct oblique carinae.

Hosts: *Tinea palaechrysis* Meyrick (Tineidae), *Tinea* sp. or *Crypsithyris* sp. "Pupa of case bearing cotton moth".

Distribution: India, Malaysia, Taiwan and Seychelles

Materials examined: 1 F. INDIA, W.Bengal? Barrackpore, S.K.Gupta, 13.vi.1962. 1F. Calcutta, S.K.Gupta, iv.1981.

8. *Epitranus ramnathi* (Mani and Dubey)

Arretocera ramnathi Mani and Dubey, 1973:21-23, F. INDIA, Uttar Pradesh, Dehra Dun (USNM) (examined).

Epitranus melongenensis Husain and Agarwal, 1981c:427, F. INDIA, Uttar Pradesh, Aligarh (ZDAMU) (examined) **syn.nov.**

Epitranus giganticus Husain and Agarwal 1981C:27, F. INDIA, Uttar Pradesh, Aligarh (ZDAMU) (examined) **syn.nov.**

Epitranus simplexus Husain and Agarwal 1981C: 427, F. INDIA, Uttar Pradesh, Aligarh (ZDAMU) (examined) **syn.nov.**

Epitranus areolatus Husain and Agarwal 1981C:429, F. INDIA, Uttar Pradesh, Aligarh (ZDAMU) (examined) **syn.nov.**

Epitranus rossicarpus Husain and Agarwal, 1981C:429, F. INDIA, Uttar Pradesh, Aligarh (ZDAMU) (examined) **syn.nov.**

The known synonyms are *Chalcitella annexia* Mani and Dubey (1973), *Arretocera ophiomontana* Mani and Dubey (1973), *Arretocera sancti-johani* Mani and Dubey (1973).

This is an extremely variable species and these variations seems to be the reason why it has been mistaken several times by some authors who described it under several names. I cannot separate the types of *melongenensis*, *giganticus*, *simplexus*, *areolatus* and *rossicarpus* from *ramnathi* on valid specific characters and I regard these as *ramnathi* (Most of the species reported as new synonyms are also stated to have been collected from the same host).

Hosts: *Crypsithyris longicornis* Stainton (Tineidae). *melongenensis*, *giganticus*, *areolatus*, and *rossicarpus* are stated to be collected from "ex *Lucinodes orbonalis* Guen on *Solanum melongena* L."

The species *simplexus* is stated to have collected from "ex *Chilo simplex* Butt. on *Zea mays* L."

Distribution: India, Nepal.

Materials examined: All types of species mentioned above under *ramnathi* and one M. INDIA, Kerala, Nilambur, Narendran, 1980., 3F. Uttar Pradesh, Aligarh, Hayat, 23.iv.1987. 1M. Karnataka, Bangalore, K.D. Ghorpade, 26.iii.1978.

9. *Epitranus indicus* Husain and Agarwal

Epitranus indicus Husain & Agarwal, 1981c: 425, F. INDIA, Uttar Pradesh, (ZDAMU) (examined).

The type is in poor condition. It comes extremely close to *Epitranus nigriceps* Boucek the type of which I could not examine. It differs from *nigriceps* in having not trilobed margin of clypeus.

Host: Stated to have collected from "*Lucinodes orbonalis* Guen on *Solanum melongena* L".

Distribution: India.

Material examined: Type only.

10. *Epitranus punctatus* sp. nov.

(Figs. 351-354)

Female: Length 2.67-3.52mm. Black, scape, fore and mid legs, hind tibia, hind trochanter, apex of hind femora, tegulae and ventral side of gaster testaceous. Eyes yellowish, funicle liver brown; wings hyaline, veins pale brown. Head (Fig.351) 1.5x as wide as long, a little wider than maximum width of thorax; frons distinctly punctate, on sides interstices smooth and shiny, punctures shallow; eyes, vertex and antennae with relatively long pubescence; POL and OOL smooth, ocelli in a raised triangular area; area behind hind ocelli with shallow pits; relative measurements of POL:5.5, OOL:4; scrobe with transverse carinae converging towards toruli, reaching about level of middle of eye; clypeus less developed; anterior margin without teeth. Antenna (Fig. 352) with scape not reaching front

ocellus, antenna with eight segments between pedicel and clava. Posterior margin of pronotum deeply emarginate; pits on thorax characteristically and relatively large and shallow, larger on scutellum, interstices smooth and shiny; thorax with sparse but long pubescence; apex of scutellum (Fig.353) rounded, propodeum with distinct submedian carinae; lateral teeth inconspicuous; forewing with marginal vein clavate; not distinctly curved into a stigmal vein, without pilosity forming a hairline or a streak directed obliquely basad; wings hyaline with pubescence on anterior half, apical fringe present. Hind coxa and hind femur (Fig.354) densely pubescent on outer side; hind femur little more than 1.5x as long as wide, outer ventral margin with a row of somewhat comb-like seventeen teeth, basal tooth larger; hind tibia with a distinct tooth on subbasal hump, tarsal sulcus less developed, not at all reaching subbasal hump. Relative measurement of petiole:22; post-petiolar part:38; petiole of uniform width, with four carinae on basodorsal side, lateral carinae indistinct on median and distal part of dorsal region; post-petiolar part of gaster subglobose.

Holotype: F. MALAYSIA, Negris, Pasoh Forest Reserve, Coll. P. and M. Baker, 5.v.1979. (AEI). *Paratype*: 12 F. same data of holotype.

11. *Epitranus pilosipennis* Boucek

(Fig. 355)

Epitranus pilosipennis Boucek 1982a:604, M. PHILIPPINES, Camarines, Sur.Mt.Isarog (BBM).

Boucek described this species based on a single male specimen. Though I have not seen this specimen, I could study several other specimens present in USNM and these fitted very well to the description of Boucek (1982). This resembles the species *erythrogaster* except for the extensive wing pilosity, infumation and other main features mentioned by Boucek (1982).

Hosts: Unknown.

Distribution: Philippines.

Materials examined: 5F. 4 M. PHILIPPINES, Luzon, Mindanao, Basilan, C.F.Baker, 1927. 4M. PHILIPPINES, Townes Family, H.M.& D.T. Townes, 1953-1954. 1F. Mindanao, Coll.C.M.Yoshimoto, 1.xi. 1959.

12. *Epitranus bifasciatus* Boucek

Epitranus bifasciatus Boucek 1982a: 609, F. MALAYSIA, Pahang (BMNH)

Very similar to *erythrogaster* but differs from it in having forewing with two brown cross-bands, marginal vein at apex slightly wider, down-curved. In two specimens from Philippines, the red colour is more extensive all over head and thorax.

Hosts: Unknown.

Distribution: Malaysia, Papua New Guinea and Philippines (new record).

Materials examined: 7F. PHILIPPINES, Luzon, Mindanao, Basilan, Negris, C.F. Baker, 1927.

13. *Epitranus vicinus* Boucek

Epitranus vicinus Boucek, 1982a:610, F. 1982:610, Holotype F. PAPUA NEW GUINEA, Wau (BBM).

Very close to *bifasciatus* but differs mainly in the sculpture of head and thorax. Occiput with punctures coarse, sparse at least medially and laterally with shiny interstices; interstices of vertex, frons and thorax shiny.

Distribution: Papua New Guinea, Indonesia, Philippines (new record).

Material examined: 10 F. 2M. PHILIPPINES, Mindanao, Basilan, Luzon, Coll.C.F.Baker, 1927.

14. *Epitranus frontus* sp. nov.

(Figs. 356—359)

Female : Length 2.21 mm. Head, antenna, thorax and hind legs liver colour; gaster testaceous; fore and mid legs brownish yellow, wings hyaline with minute pubescence.

Head (Fig.356) a little wider than its length, a trifle over maximum width of thorax; scrobe as in figure; clypeus distinctly developed with three teeth; parascrobal space and part above scrobe with distinct close characteristic dense pits, vertex and occiput densely pitted; frons very convex when viewed from dorsal region; occiput and vertex as in figure 357. POL:11, OOL:12. Antenna (Fig.358) not reaching front ocellus with seven segments between pedicel and clava. Thorax with close pits; interstices narrow and smooth on most parts, posterior margin of pronotum slightly emarginate; scutellum somewhat convex, apex rounded; propodeum with percurrent median area delimited by distinct submedian carinae, lateral teeth indistinct; wings hyaline with marginal vein faintly visible, pale yellow, a faint streak directed obliquely from stigmal vein to basal region; ventral side of hind coxa and outer disc of hind femora moderately pubescent; outer ventral margins of hind femora (Fig.359) with irregular nine teeth; tooth of hind tibia crenulate formed by five small teeth, median tooth larger; tarsal sulcus not at all reaching tibial hump. Gaster with petiole slightly wider at base with three carinae on dorsal side, relative measurements of petiole:13, postpetiolar gaster:27, gaster acuminate at apex.

Holotype: F. MALAYSIA, Negris, Pasoh For. Res. P and M. Baker, 31.i.1980. (AED).

15. *Epitranus globosus* sp. nov.

(Figs. 360-364)

Female: Length 3.52mm. Black; outer sides of parascrobal space, clypeus, antennal toruli, antenna, fore and mid legs, apex of hind coxa, base and apex of hind femora, hind tibia, base and ventral side of gaster reddish brown, tarsus brownish yellow, wings hyaline with brownish tinge, tegulae pale testaceous; eyes and ocelli

shiny yellow. Head (Fig.360) 1.17x as wide as long, distinctly wider than maximum width of thorax; scrobal carinae almost straight, not quite converging towards antennal toruli, somewhat extending to parascrobal space, clypeus extremely small, edentate, interantennal projection raised and prominent, toruli resting on a projected shelf, so that the frons looks somewhat truncate at ventral side; antennae (Fig.361) with eight segments between pedicel and club, temples extremely narrow and extremely concave when viewed from dorsal side; relative measurements of POL:6, OOL:5. Occiput and vertex closely pitted, interstices rugose. Thorax with close pits, interstices shagreened and rugulose, scutellum somewhat convex, apex rounded. propodeum (Fig. 362) with submedian carinae broken in middle region, basal broken part directed to outer sublateral carinae; lateral teeth not prominent. Forewing hyaline, with marginal vein slightly tend to form a stigmal vein distally with a distinct line of hairs starting from stigmal vein to basal part of wing as in *erythrogaster*; hind coxa relatively long, as long as hind femora, (Fig.363) ventral side with a short silvery dense pubescence, dorsal side punctate with interstices rugulose. Gaster (Fig.364) with relative measurements of petiole:55 and post-petiolar part:74, postpetiolar part globose.

Holotype: F. MALAYSIA: Negrin, Pasoh Forest Reserve. P. and M. Baker, 13.x.1978 (AEI).

16. *Epitranus gauldi* Boucek

(Fig. 365)

Epitranus gauldi Boucek 1982a:609, M. BRUNEI (BMNH).

Boucek described this species based on two male specimens. Black, merging with dark red brown in places; following parts paler red: antennae basally, tegulae, fore and mid legs, hind knees and tibiae; tarsi still paler. Wings hyaline. Otherwise resemble *pilosipennis* in many respects.

Host: Unknown.

Distribution: Brunei.

Materials examined: Known only from type.

17. *Epitranus crassicornis* Boucek

(Fig. 366)

Epitranus crassicornis Boucek:1982a:608, F. LAOS (BMNH)

Head (except mouth region) and ventral parts of thorax black; rest of body mainly rusty brown, gaster dark brown. Wings hyaline. Very similar to *erythrogaster* but differs from it in the characters mentioned in the key.

Host: Unknown.

Distribution: Laos, Malaysia (new record) and Vietnam (new record.)

Materials examined: 11F. Malaysia, Negris, Pasoh For. Res, P.&M.Baker, 1979-1980. 1F. Vietnam, Vinhlong, R.E. Leech, 10.vi. 1960.

18. *Epitranus erythrogaster* Cameron

(Fig. 367)

Epitranus erythrogaster Cameron 1888: 119, Lectotype F. JAPAN, Nagasaki (BMNH) (examined)

Epitranus acuminatus Husain and Agarwal, 1982:425, F. INDIA, Uttar Pradesh, Aligarh (ZDAMU) (examined) **syn. nov.**

The known synonyms are: *Anacryptus sculpturatus* Crawford (1910 b), *Anacryptus kankauensis* Masi (1933), *Arretoceroides ceylonensis* Mani (1936), *Anacryptus raoi* Mani and Kurian (1953), *Chalcitelloides devadatta* W. Fernando (1957), *Chalcitelloides ajatasattu* Fernando (1957), *Chalcitella cinca* W. Fernando (1958), *Pararretoceroides austini* E. Fernando (1959), *Arretocera ambadevia* Mani & Dubey (1973), *Arretocera nilamburensis* (!) Mani and Dubey (1973), *Arretocera pallava* Mani & Dubey (1973), *Arretocera tanjorensis* Mani & Dubey (1973), *Chalcitella nilamburensis* Mani & Dubey (1974) and *Arretocera malabarensis* Mani & Dubey (1974).

Through the kindness of M.M. Agarwal, I could examine the holotype of *acuminatus* and I cannot separate it from the highly

variable *erythrogaster* in clear cut specific differences. This is the most common species of the genus in Oriental Region.

Host: I had obtained several specimens of this species from pupa of *Corcyra cephalonica* (Stainton) (Pyralidae) in Kerala during 1970-1980. According to Husain & Agarwal the host of *acuminatus* is *Chilo simplex* Bur. on *Zea mays* L.

Distribution: All over Oriental Region, S. Japan.

Material examined: Apart from the type, mentioned above several hundreds of specimens both male and female all over India, Philippines, Malaysia and Indonesia.

19. *Epitranus elongatulus* (Motschulsky)

(Fig. 368)

Chalcis elongatula Motschulsky, 1863: 40, Lectotype F. SRI LANKA Mt. Patannas (ZMMS) (homotype examined).

Known synonym: *Epitranus shirakii* Habu (1960). The well illustrated description of Habu (1960) is sufficient for its recognition. The black colour in some specimens turn to liver brown as a variation.

Host: Unknown.

Distribution: All over Oriental Region, S. Japan and S. China

Material examined: 1F. PHILIPPINES, Mindanao, C.F. Baker, 1927. 1F. NEPAL, Birganj, Lothar, 15.ix.1967. 1F. JAVA, Bogor, J.v.d. Vecht, 9.viii. 1953. 1F. INDIA, Kerala, Thekkady, Narendran & Party; 13.v.1986. 1F. Kerala, Malampuzha, Narendran and party, 16.i. 1986. 3F. Kerala, Nilambur, Narendran & party, 21.viii.1985. 4.i. 1985, 13.viii. 1987. 1F. Kerala, Calicut Uni. Campus, Narendran and Thresia, 20.i.1986. 2F. Kerala, Parambikulam, Narendran & party, 19.xii. 1985. 1F. BRUNEL, I. Gauld, viii-ix. 1979. 1F. Karnataka, Bangalore, K.D. Ghorpade, 25.iii. 1978.

20. *Epitranus subplanus* Boucek

(Figs. 369-370)

Epitranus subplanus Boucek, 1982a: 615. Holotype F. PHILIPPINES Luzon (BBM).

Black species with legs brownish or blackish brown; flagellum with pedicel combined 1.15x as long as breadth of head. Hind tibia subbasally with three small teeth. Pronotal side with distinct horizontal edge below level of prepectus.

Host: Unknown.

Distribution: Philippines, Malaysia (new record).

Materials examined: 4 F. MALAYSIA, Negril. P&M, Baker, 1978-1979, 1F. PHILIPPINES, Mindanao, C.F. Baker, 1927. 1F. MALAYA, Selangore, Coll. Chua Tock Hing, 3-19. vii. 1970

21. *Epitranus parvidens* (Strand)

(Figs:371-373)

Anacryptus parvidens Strand 1911a:7-8 Lectotype:M. INDONESIA, Bintang (ZMHU) (homotype examined).

Epitranus nigrus Husain&Agarwal, 1982.423, F. INDIA, Hyderabad, (ZDAMU) (examined) **syn. nov.**

Other known synonyms are: *Chalcitella borivilia* Mani and Dubey (1973), *Chalcitella monticola* Mani & Dubey (1973), *Chalcitella malabarensis* Mani & Dubey (1973).

I examined the holotype of *nigrus* and I found it to be the same as *parvidens* (Strand). Slender, black and small species, head rather stout dorsally, less than 2x as broad as long; clypeal projection rounded-subangulate in lateral view (Fig. 371) Propodeum similar to that of *oxytelus* but anterior areola usually narrower; subbasal hump of hind tibia with 1 or 2 denticles in female, in male with one strong tooth.

Host: Unknown.

Distribution: India, Sri Lanka, West Malaysia, W.Indonesia Vietnam, British N.Borneo (new record), Philippines (new record),

Material examined: 1F., 1M. INDIA, Kerala, Nilambur, Narendran and party, 21.v.1985. 1M. 2F. Kerala, Silent Valley Narendran and party, 15.v.1985, 26.ix.1987. 2F. Kerala, C.U.Campus, Narendran and Thresia, 27.ix.1985, iv.1987. 1F. Assam, Sudhir, 20.v.1986. 1M. TamilNadu Manjler Dam, J.S.Noyes, 16.ix.1979. 3F., 3M. MALAYSIA, Negris, Pasoh For.Res. P. and M. Baker, 1978-1979. 2F. BRITISH N.BORNEO, T.C.Maa, 8-11.x.1958. 1 M, PHILIPPINES Mindanao, H.E.Milliron, 2-5, vii.1958.

22. *Epitranus stantoni* (Ashmead)

(Figs. 374, 375)

Arretocera stantoni Ashmead, 1904b: 136: Lectotype M PHILIPPINES, Manila (USNM) (examined).

This species comes very near *parvidens* (Strand) but can be separated by the characters used in the key above. Occiput smooth and shiny except for scattered pits submedially. Antenna slightly clavate in female. Thorax much more convex than in *parvidens*.

Host: Unknown.

Distribution: Philippines, Indonesia (new record).

Material examined: Apart from types: 2M. PHILIPPINES, Los Banos C.F. Baker, 1927. 5M. Mt.St.Thomas, Benan Mt.Province, Mt.Polis, Bagaio, H.M. & D.T. Townes, Townes family, 1952-1953, 1F. INDONESIA, Sulawesi, Coll.C.V. Achterberg, 5-9.xii.1985.

23. *Epitranus malaicus* Boucek

(Figs. 376, 377)

Epitranus malaicus Boucek, 1982a: 617, M. MALAYSIA, Selangore, (BMNH) (examined).

Black with reddish colour wide spread on antennae (except tips); tegulae and legs except hind coxae (in Philippine specimens red colour becomes blackish-red or reddish black; wings subhyaline; occiput and frons shiny with umbilicate pits; scrobe with few cross striae,

antennal sockets raised; clypeal projection thick, in front view rounded and angulate.

Host: Unknown.

Distribution: Malaysia and Philippines (new record).

Materials examined: Apart from type, 1F. PHILIPPINES, Baguio, Mt. Province, Townes family, 19.vii.1953. 2F. Mindanao, C.F. Baker, 1927.

24 *Epitranus salinae* sp. nov.

(Figs. 378-382)

Female: Length 3.58–5.94mm. Black; antenna, fore and mid legs, apices of hind coxa, hind tibiae and gaster rufous; hind femora rufous with a black patch in middle, femoral teeth black; wings hyaline. Head (Fig.378) 1.25x as broad as its length, a trifle over maximum width of thorax; scrobe with striated carinae converging towards antennal toruli as in figure 379. Frons with distinct pits on parascrobal space and area above scrobe, clypeus long and with three distinctly well marked teeth; interantennal projection hardly distinct; POL:5.5, OOL:4; occiput with scattered pits; interstices wider than diameter of pits, smooth and shiny; antenna with scape, not reaching front ocellus with eight segments between clava and pedicel. Thorax with close umbilicate pits, interstices smooth and shiny; scutellum with median basal area slightly sunken, apex of scutellum rounded; forewings hyaline with marginal vein at apex distinctly curved into short stigmal vein without a hairline, or streak running towards base; hind coxa sparsely pubescent on ventral side; hind femora (Fig. 381) 2.35x as long as broad with distinct pits on disc, ventral margin with nine irregular teeth, basal tooth large, disc moderately pubescent; hind tibial hump with a single large tooth, not crenulate, tarsal sulcus not at all reaching tibial hump; propodeum with raised median carina, submedian carina absent, sublateral carina distinct, lateral teeth indistinct; gaster (Fig. 382) with petiole a trifle over 3x its median length; first tergite 2.89x length of petiole; third tergite not visible from outside, withdrawn inside to gaster, epipygium relatively very long, more than half of first gastral tergite.

Holotype: F. MALAYSIA, Negrin, Pasoh For. Res. P. & M. Baker, 9.ix.1978 (AEI). *Paratypes*: 5F. of the same collection date as above (date of collection 1978-1979).

25. *Epitranus oxytelus* Boucek

(Figs 383, 384)

Epitranus oxytelus Boucek 1982a:616. F. INDIA, Karnataka, Mudigere (BMNH)

This is a peculiar species with acuminate apex of gaster (Fig. 384). It resembles *erythrogaster* but epipygium is extremely longer than that of *erythrogaster*. In *oxytelus*, clypeal projection is rounded and triangular without teeth. Hind tibia hump indistinct but with one short tooth.

Host: Unknown.

Distribution: India, Malaysia (new record) and Philippines (new record).

Materials examined: 2F. PHILIPPINES, Mindanao, Basilan, C.F. Baker, 1927. 1F. BORNEO, Sandakan, C.F. Baker, 1927. 2F., MALAYSIA, Negrin, P. & M. Baker, 1978-1979.

26. *Epitranus hassani* Boucek

Epitranus hassani Boucek, 1982a:610. F. PAPUA NEW GUINEA (BMNH)

Boucek (1982) reported this species from Papua New Guinea and during my study stay at USNM, Washington, D.C. I could find some specimens of this species collected by C.F. Baker in 1927 from Philippines. The remarkable characters of this species include thick patches of hairs on sides of pronotum and on axillae; propodeum with strong median carina emitting a branch on sides; body mainly deep black with testaceous head and pronotum. In many Philippine specimens the red colour often extends to mesoscutum and scutellum, in some specimens the black colour extends to head also.

Host: Unknown.

Distribution: Papua New Guinea and Philippines (new record)

Materials examined: 6F., 4M. PHILIPPINES, Mindanao, Negri S. C.F. Baker, 1927.

27. *Epitranus nigriceps* Boucek

(Fig. 385)

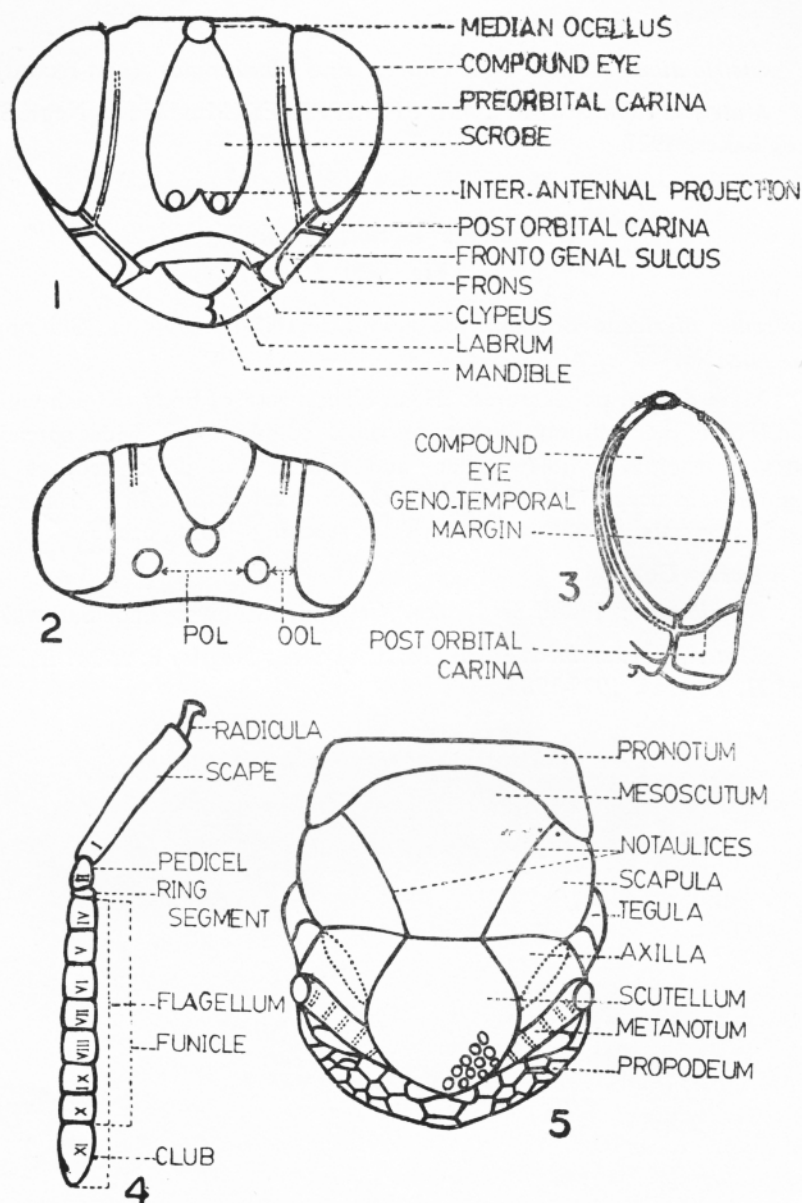
Epitranus nigriceps Boucek, 1982a:600, F. INDIA, Assam, Shillong (BMNH)

Main diagnostic features: Head black. rest of body reddish with mid lobe of mesoscutum darker or dark colour more wide spread, parts of thorax, whole gaster and femora still dark red, as if slightly translucent. Wings hyaline. Ocelli situated in broad triangle, apex of clypeus three lobed; scape not reaching front ocellus.

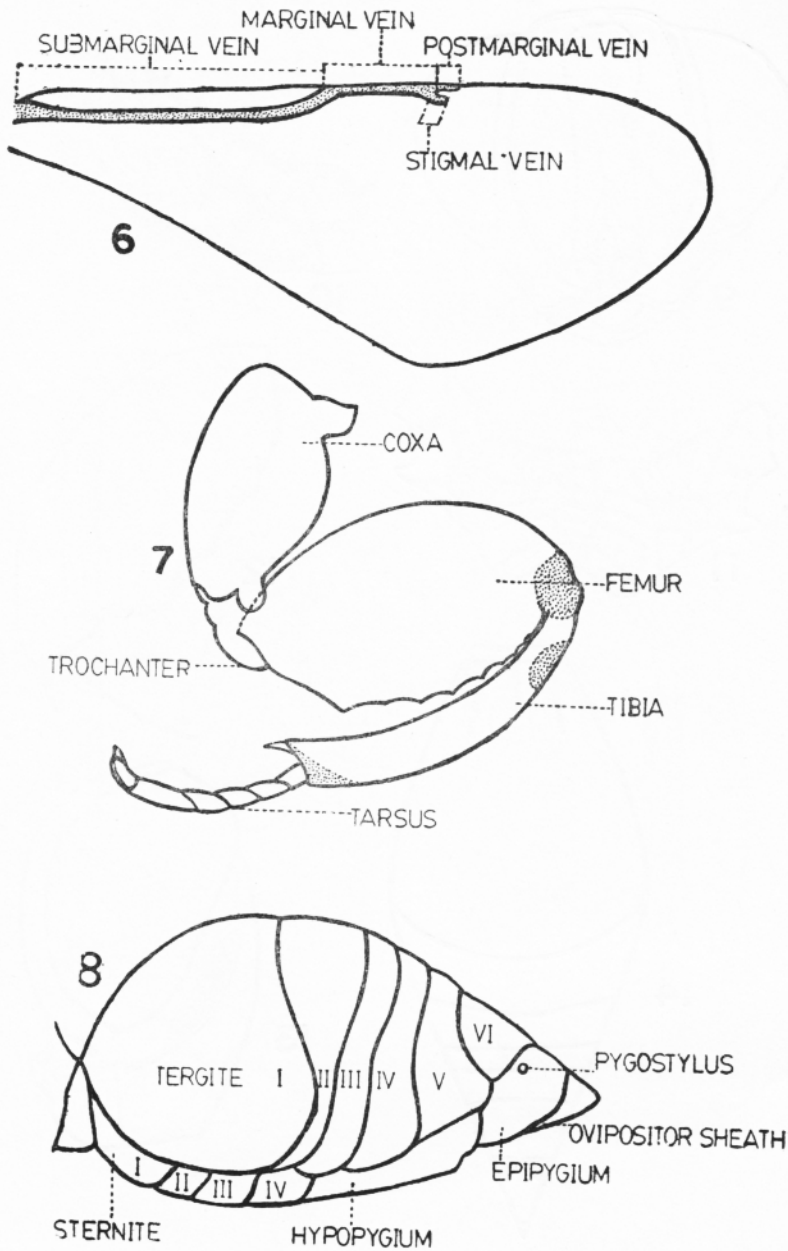
Host: Unknown.

Distribution: India, Sri Lanka, Vietnam, Malaysia and Sarawak.

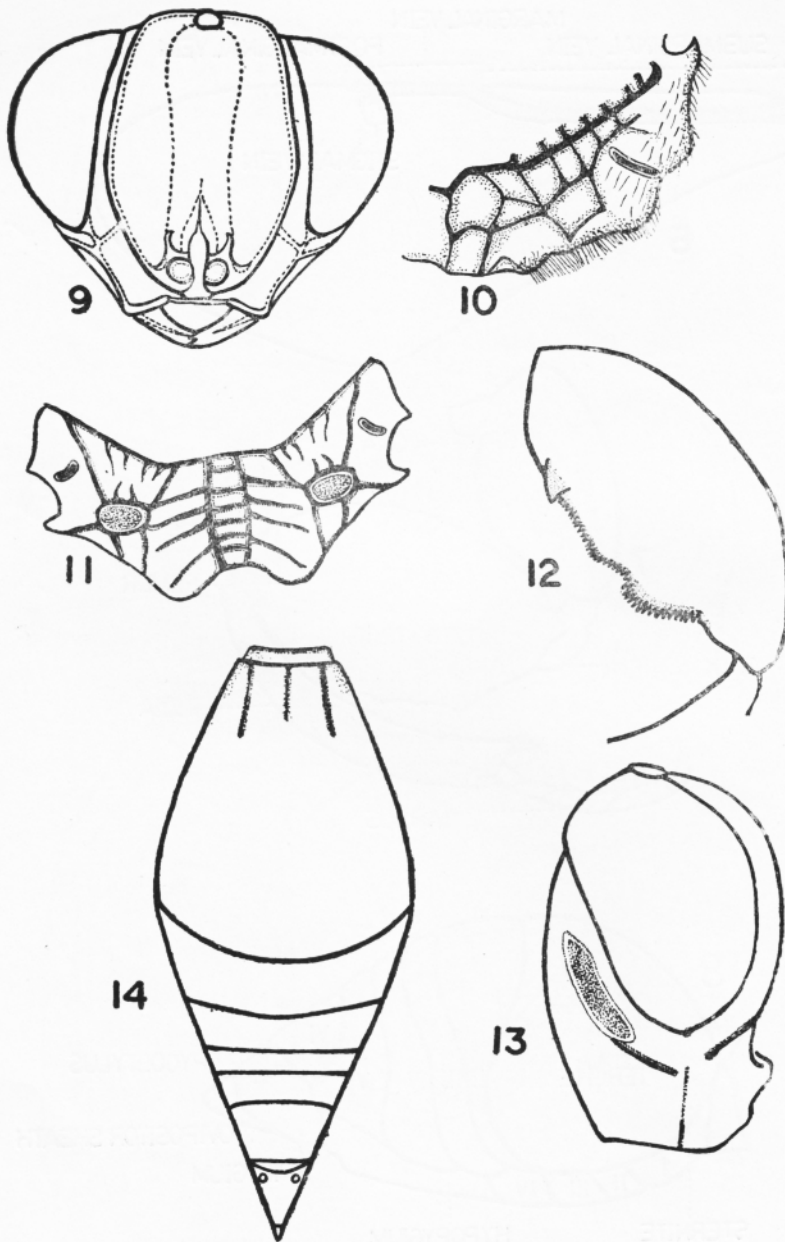
Materials examined: 13 F. MALAYSIA, Negris, P. & M. Baker and H. Townes, 1978-1983.



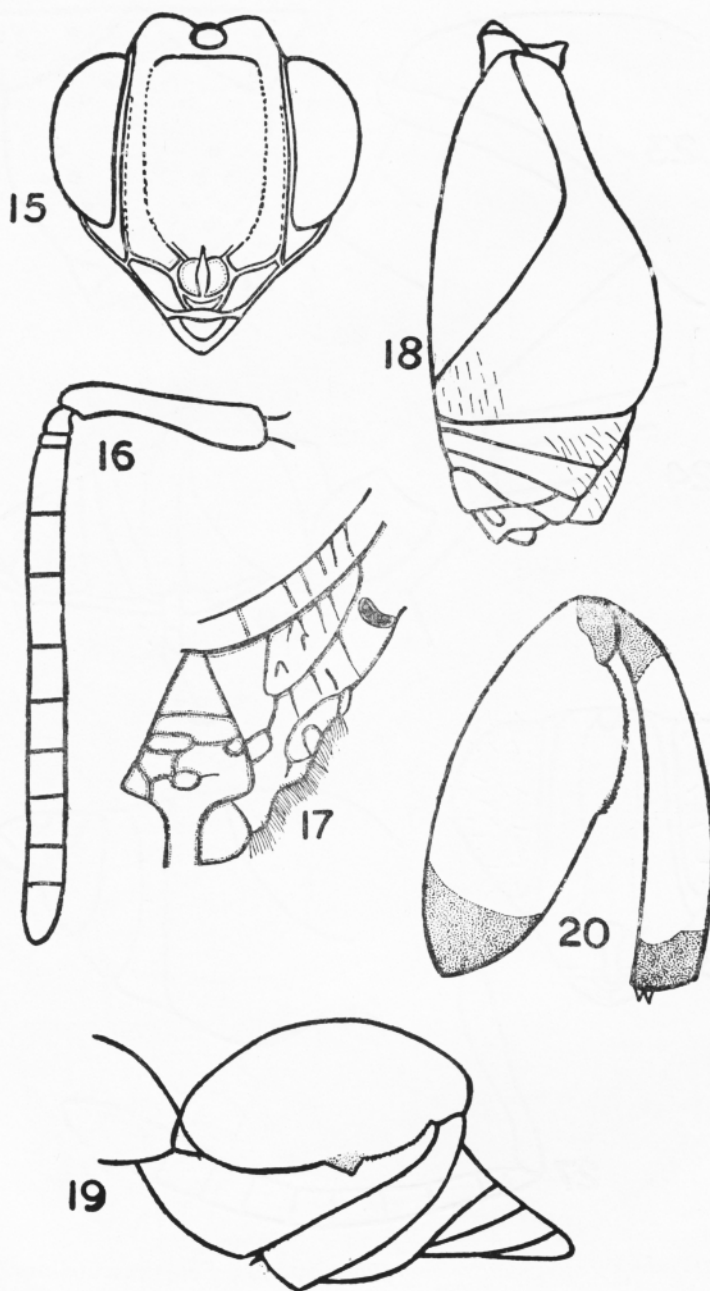
Figs 1-5 : *Brachymeria nephantidis* Gah. Female 1 head front view. 2 head dorsal view. 3 head profile. 4. antenna. 5, thorax dorsal view.



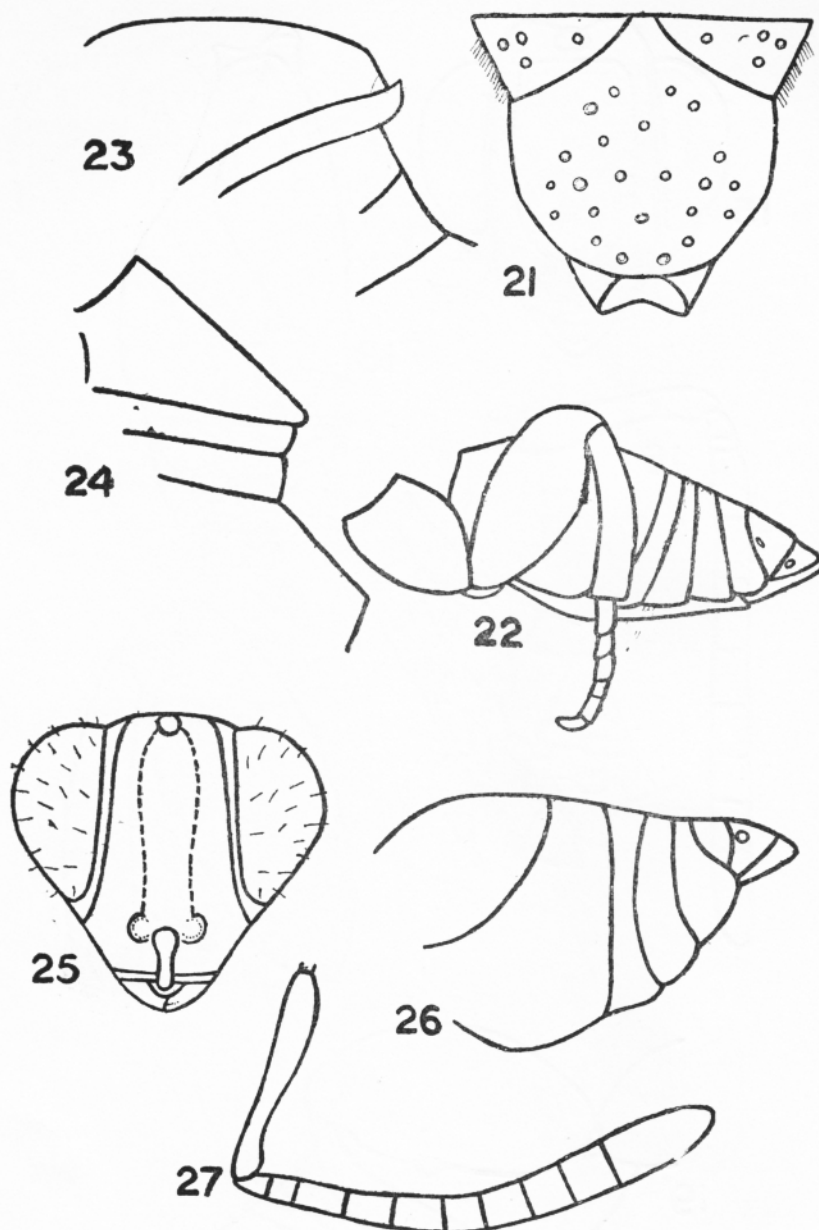
Figs. 6-8 : *Brachymeria nephantidis* Gah. Female. 6, forewing veins. 7, hind leg. 8, gaster.



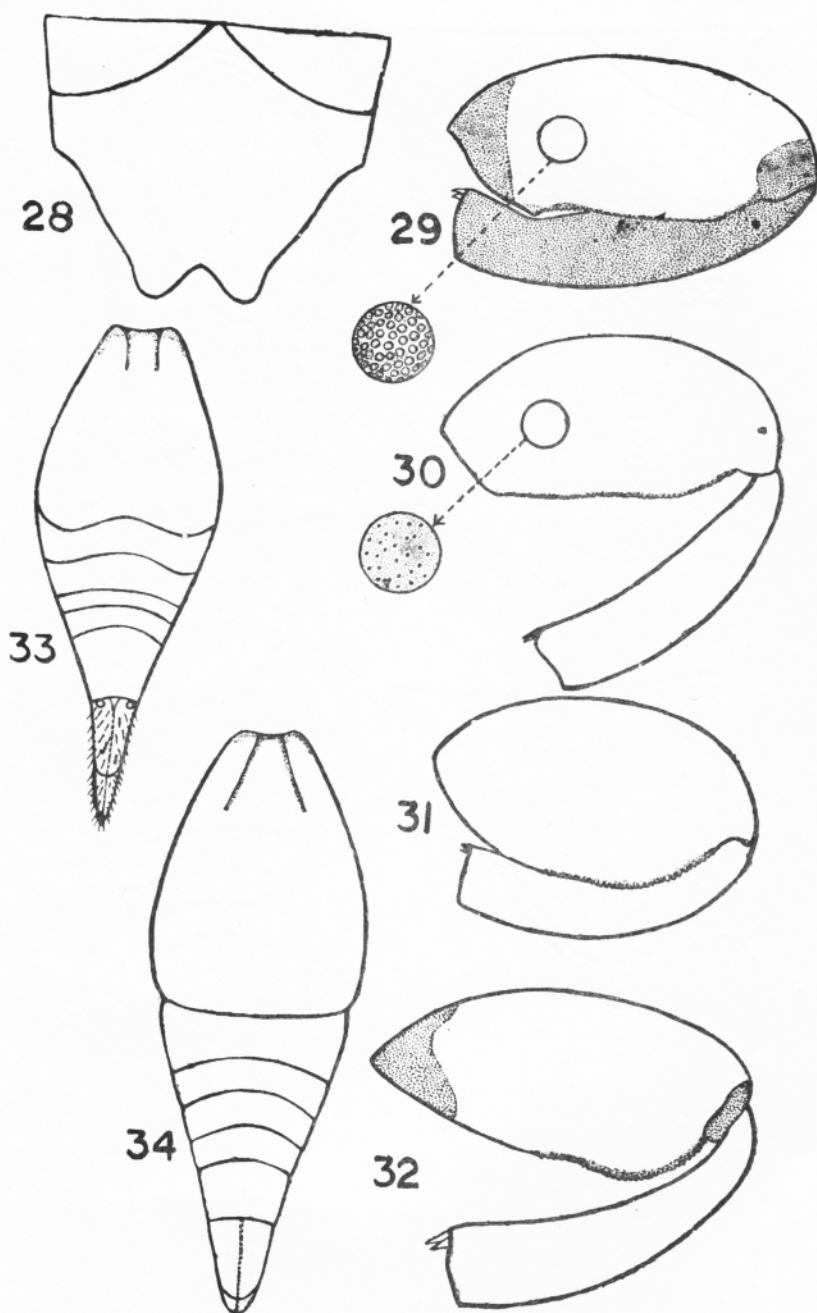
Figs. 9-14: *Antrocephalus*. 9-10: *hakonensis* (Ash.) Female: 9, head front view; 10, propodeum. 11-12: *mitys* (Wlk), Female: 11, propodeum; 12, hind femur inner view. 13-14: *bicolor* (Masi), Female: 13, head profile; 14, gaster.



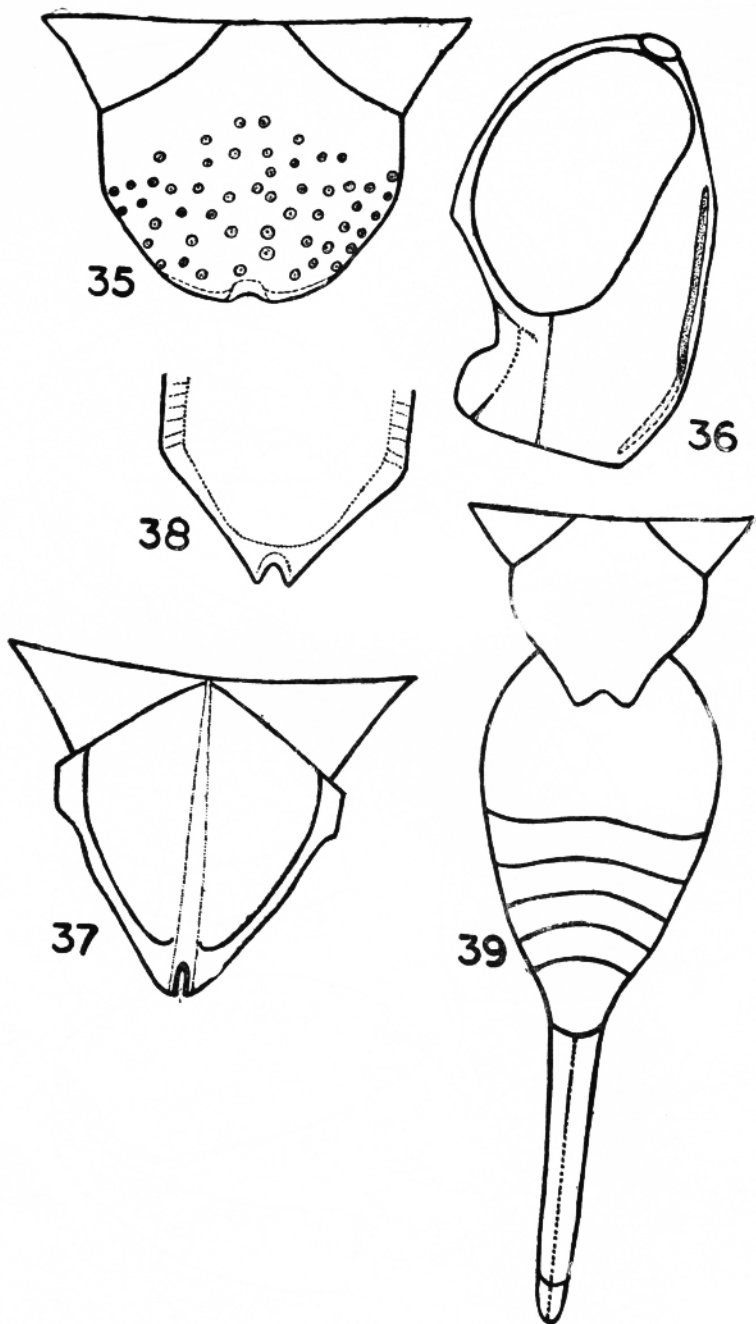
Figs 15-20 *Antrocephalus*. 15-16: *abui* sp. nov. Female: 15, head; 16, antenna. 17-18: *thresiae* sp. nov. Female: 17, propodeum; 18, gaster. 19: *brevidentata* R. & F. Female: hind femur and gaster. 20: *peechiensis* sp. nov. Female: hind femur and tibia.



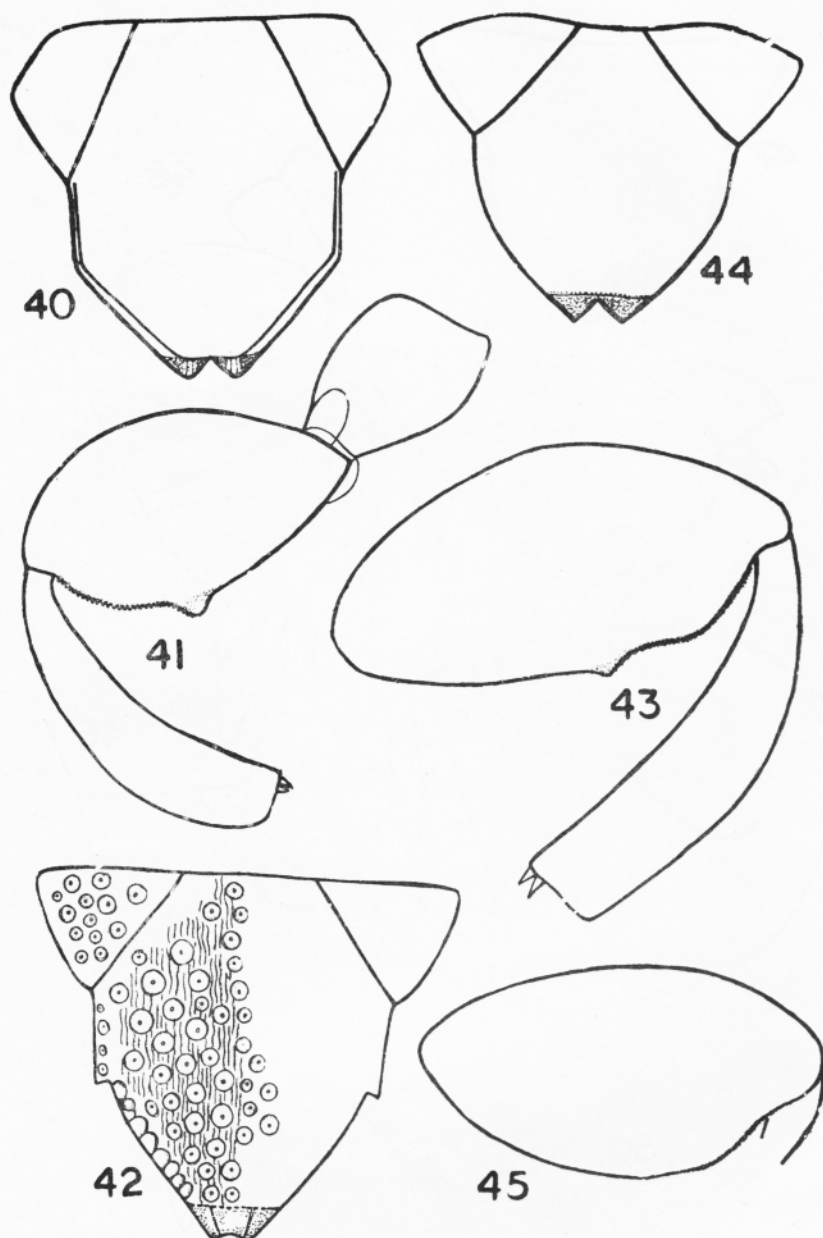
Figs. 21-27: *Antrocephalus*. 21: *nitidus* sp. nov. Female: scutellum. 22: *cariniaspis* (Cameron) Female: Gaster. 23: *japonicus* (Masi): Female: scutellum. 24: *cariniceps* (Cameron) Female: scutellum. 25: *townesi* sp. nov. Female: head front view. 26: *achterbergi* sp. nov. Female: Gaster. 27: *bouceki* sp. nov. Female antenna.



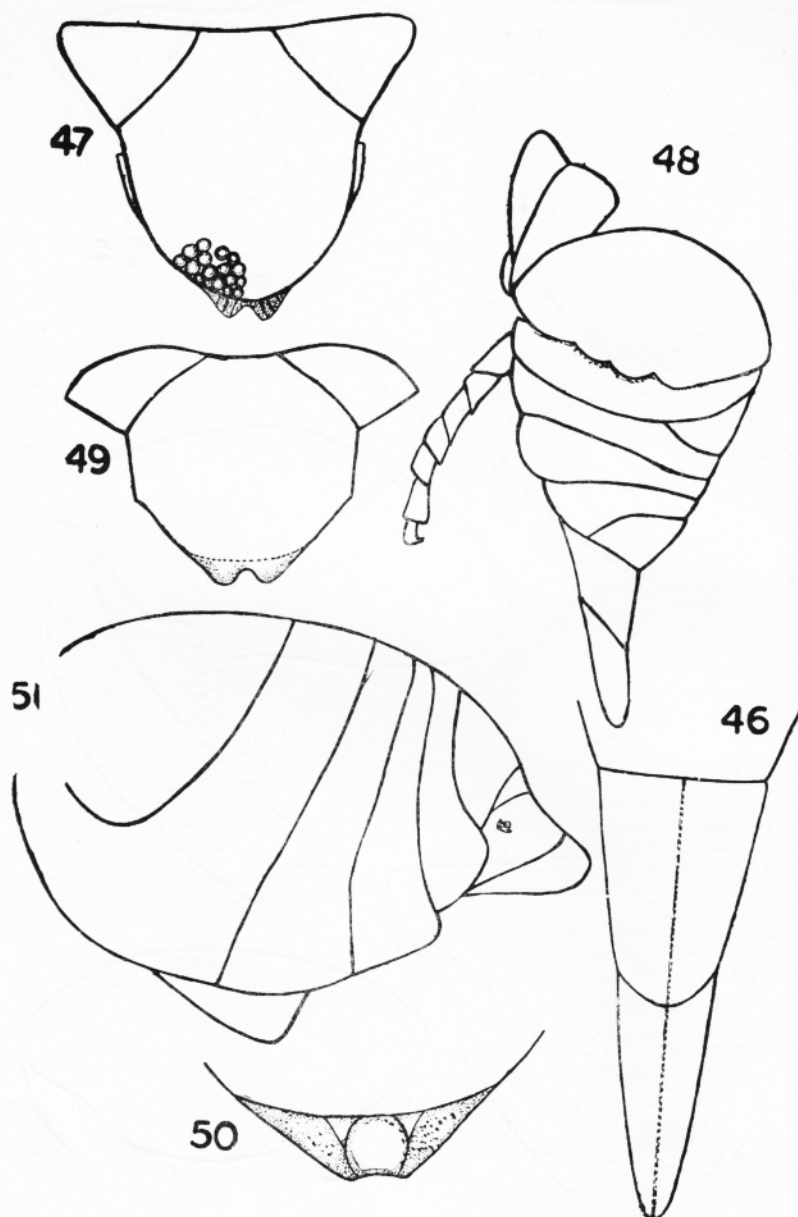
Figs. 28-34: *Antrocephalus*. 28-29: *atu'yus* sp. nov. Female: 28, scutellum; 29, hind femur & tibia. 30: *nasuta* (Holmg). Female: hind femur and tibia. 31: *phaeospilus* (Waterston) Female hind femur and tibia. 32: *validicornis* (Hol.) Male: hind femur and tibia. 33: *ceylonicus* sp. nov. Female: gaster. 34: *scutellatus* sp. nov. Female: Gaster.



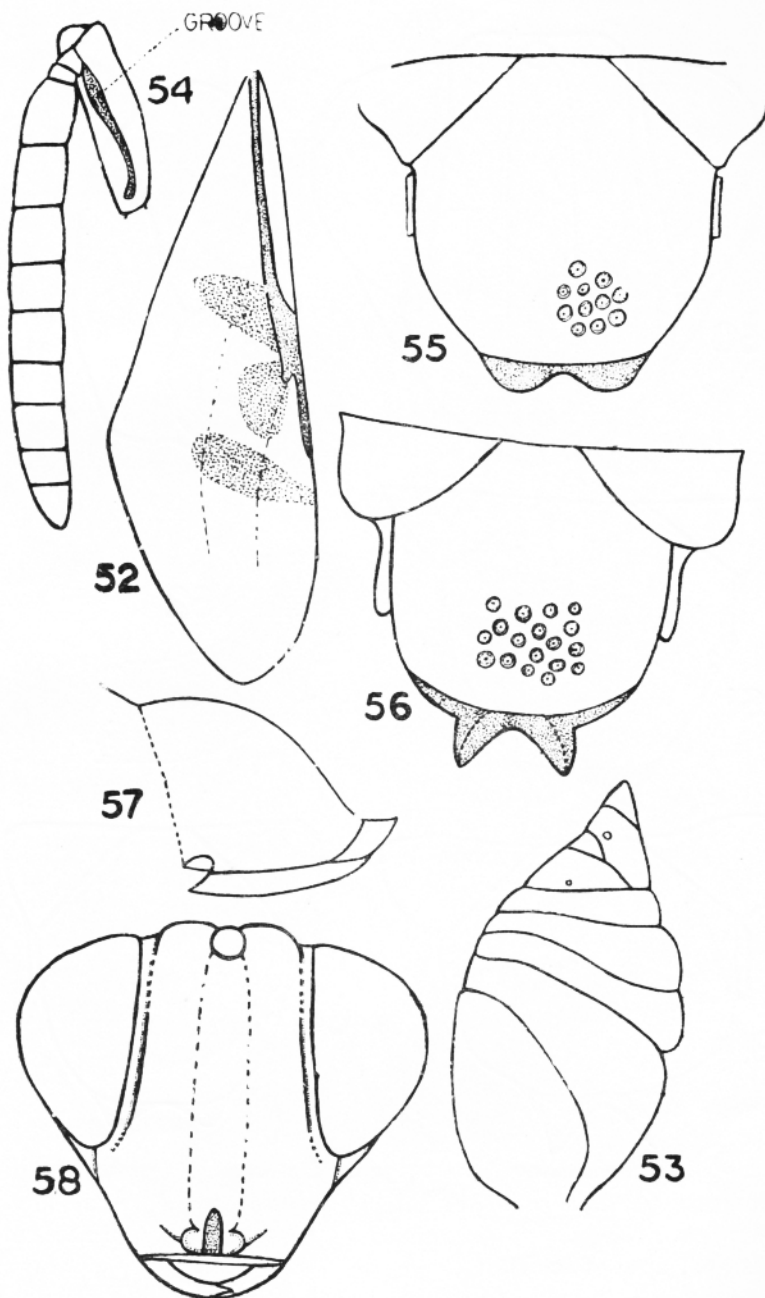
Figs.35-39 *Antrocephalus* 35; *distinctus* sp.nov. Female scutellum. 36 *fascicornis* (Wlk) Female head profile. 37; *lugubris* (Masi) Female scutellum. 38; *nicus* sp.nov. Female scutellum. 39; *hypsiphytæ* sp.nov. Female scutellum and gaster.



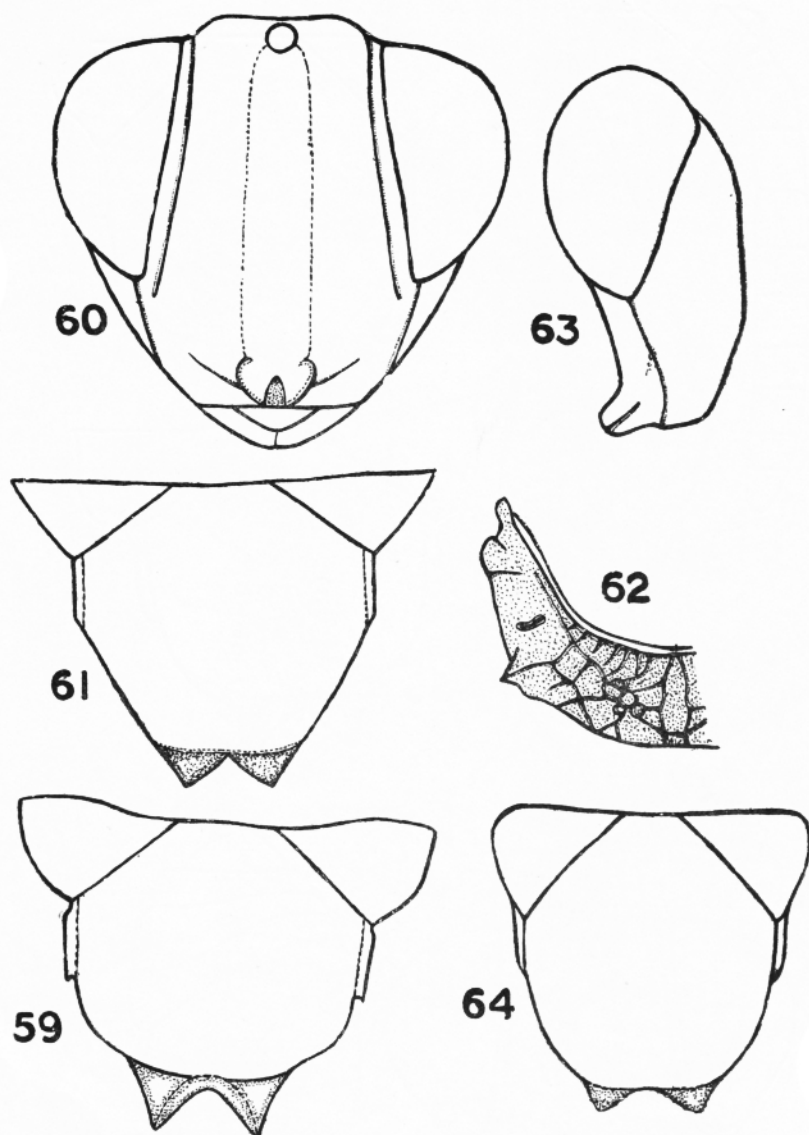
Figs.40-45: *Antrocephalus*. 40-41: *grisselli* sp nov. Female: 40, apex of scutellum; 41, hind femur and tibia. 42—43 *acutiventris* (Masi): Female: 42, apex of scutellum; 43, hind femur & tibia. 44-45: *atratus* Masi: Female: 44, apex of scutellum; 45, hind femur.



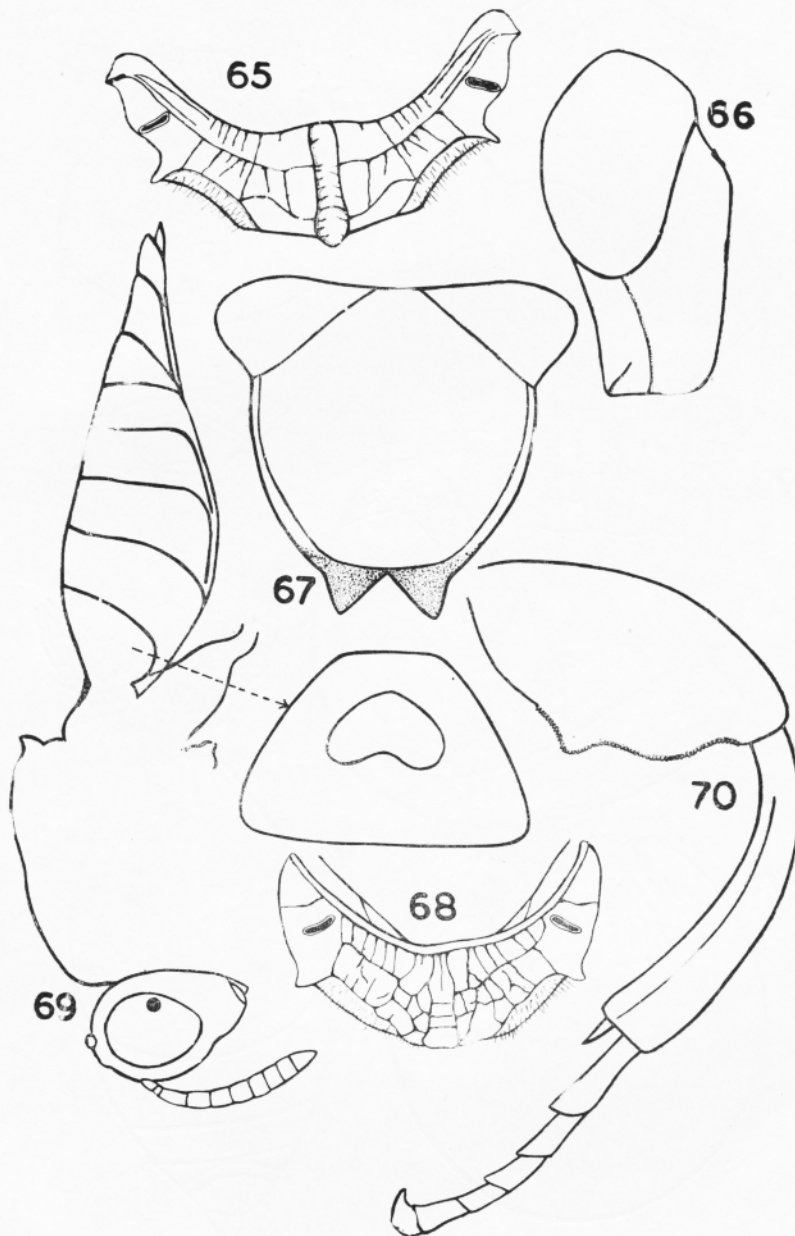
Figs. 46-51: *Kriechbaumerella*. 46: *destructor* (Wat.) Female: ovipositor sheath. 47-48: *ayyari* (Gah). Female: 47, scutellum; 48, hind leg & gaster. 49: *mansues* (Nik.) Female: apex of scutellum. 50-51: *gibsoni* sp. nov. female: 50, apex of scutellum; 51, gaster.



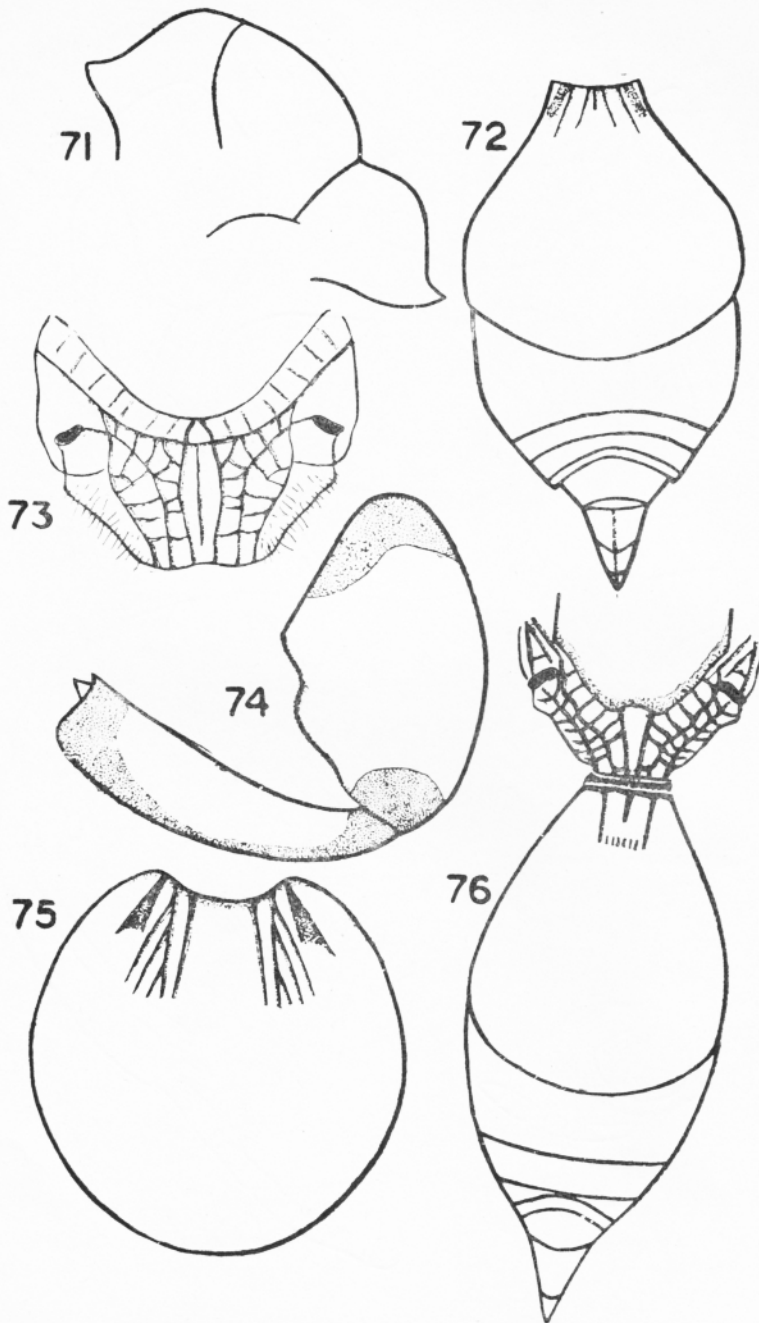
Figs. 52-58: *Kriechbaumerella*. 52-54: *cordigaster* (R. & F.): Female: 52, forewing; 53, gaster; 54, antenna. 55: *rufimanus* (Wik): Female: apex of scutellum. 56-57: *nepalensis* sp.nov. Female: 56, scutellum dorsal view; 57, scutellum lateral view. 58: *javensis* sp.nov. head.



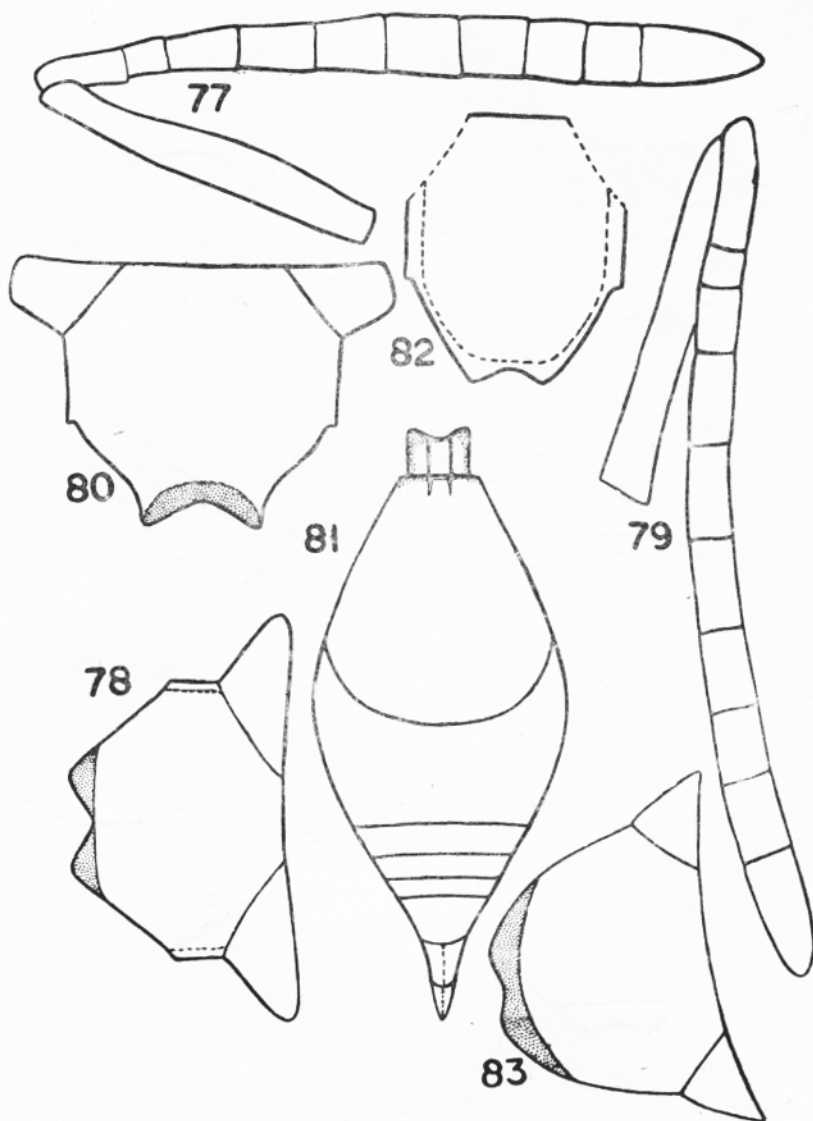
Figs. 59-64. *Kriechbaumerella*. 59: *javensis* sp.nov. Female apex of scutellum. 60-61: *titusi* sp.nov. Female: 60, head; 61, apex of scutellum. 62: *ornatipennis* (Cam.): Female: propodeum. 63-64: *kala* sp.nov. Female: 63, head; 64, apex of scutellum



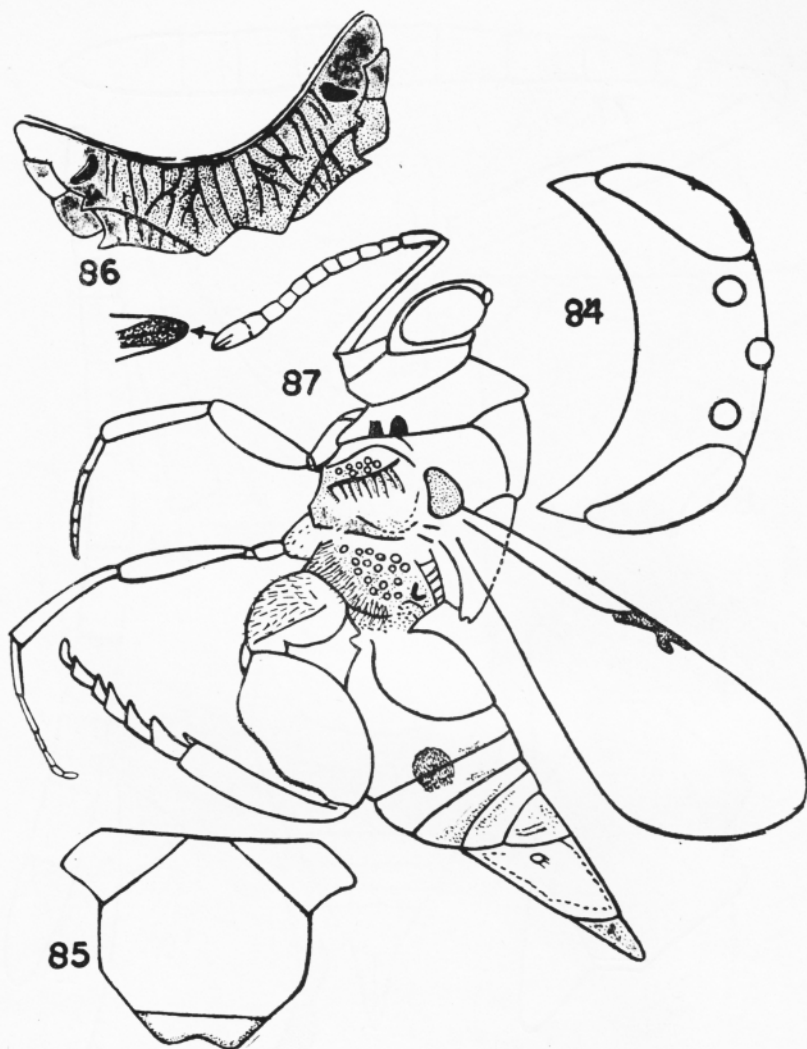
Figs. 65-68: *Kriechbaumerella*. 65: *kaia* sp.nov. Female: propodeum. 66-68: *kraussi* sp.nov. Female: 66, head; 67, apex of scutellum; 68, propodeum. Figs. 69-70: *Neochalcis breviceps* (Masi). Female: 69, head and body profile; 70, hind leg in part.



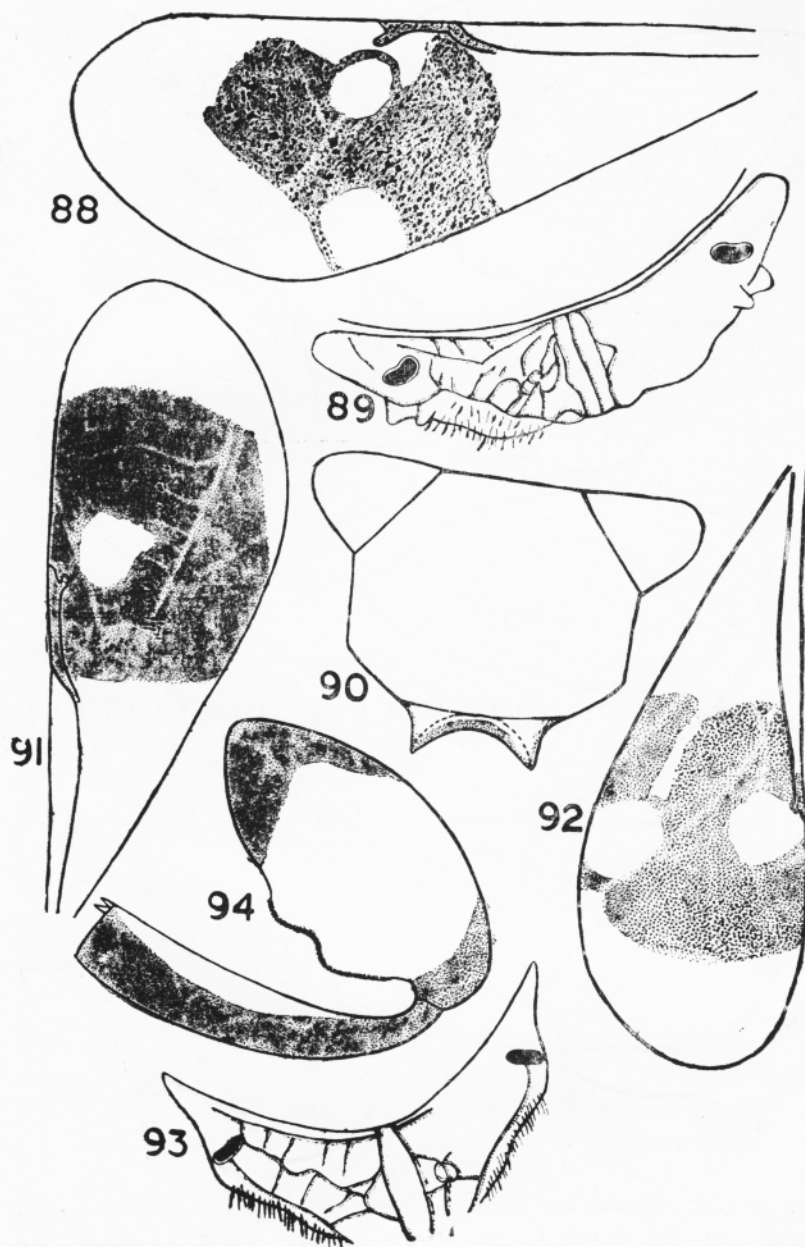
Figs. 71-76: *Hockeria*. 71-72: *scutellata* sp.nov. Female: 71, scutellum; 72, gaster. 73-75: *polycarinata* sp.nov. Female: 73, propodeum; 74, hind femur & tibia; 75, gaster first tergite. 76: *manii* sp.nov. Female: propodeum and gaster.



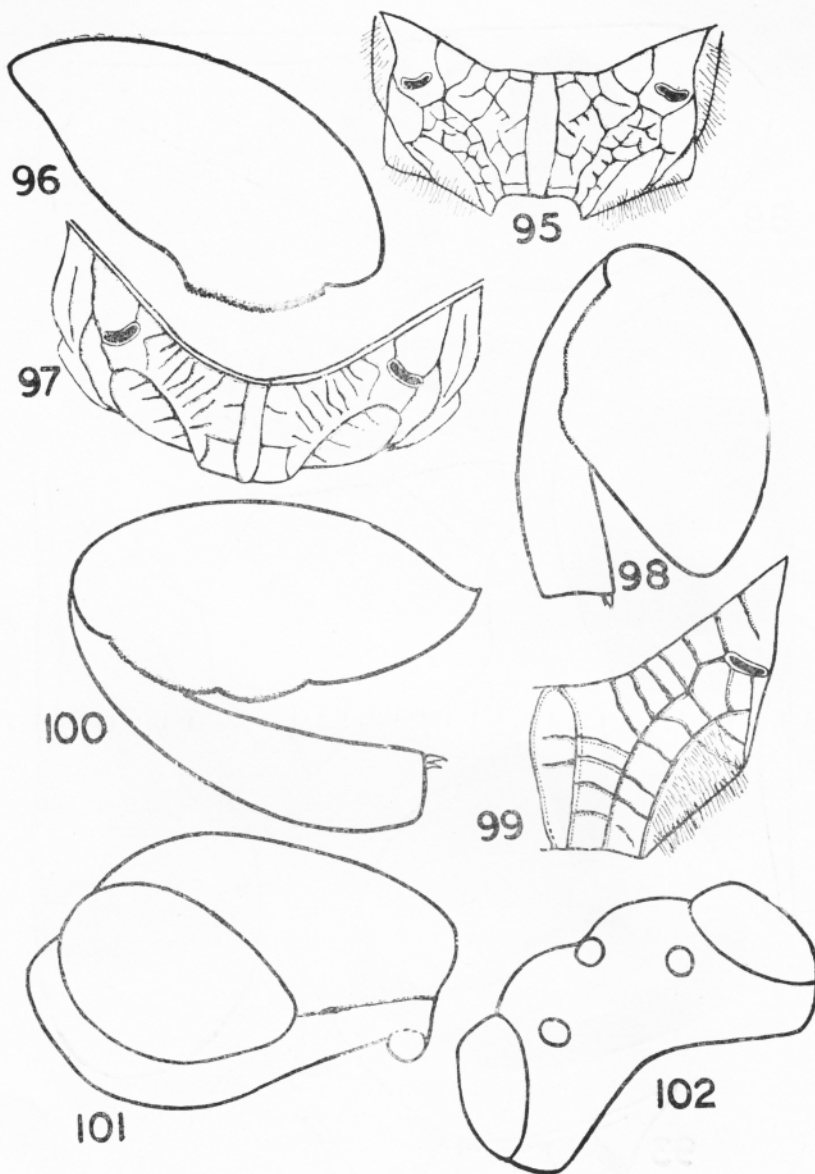
Figs. 77-87: *Hockeria*: 77-78: *lankana* sp. nov. Female: 77 antenna; 78, apex of scutellum. 79-80: *bangalorica* sp. nov. Female: 79, antenna; 80: apex of scutellum. 81: *argentigera* (Holm.) Female: gaster dorsal view. 82: *amamioshimensis* Habu: Female: scutellum. 83: *nikolskayae* H.&A.: Female: apex of scutellum



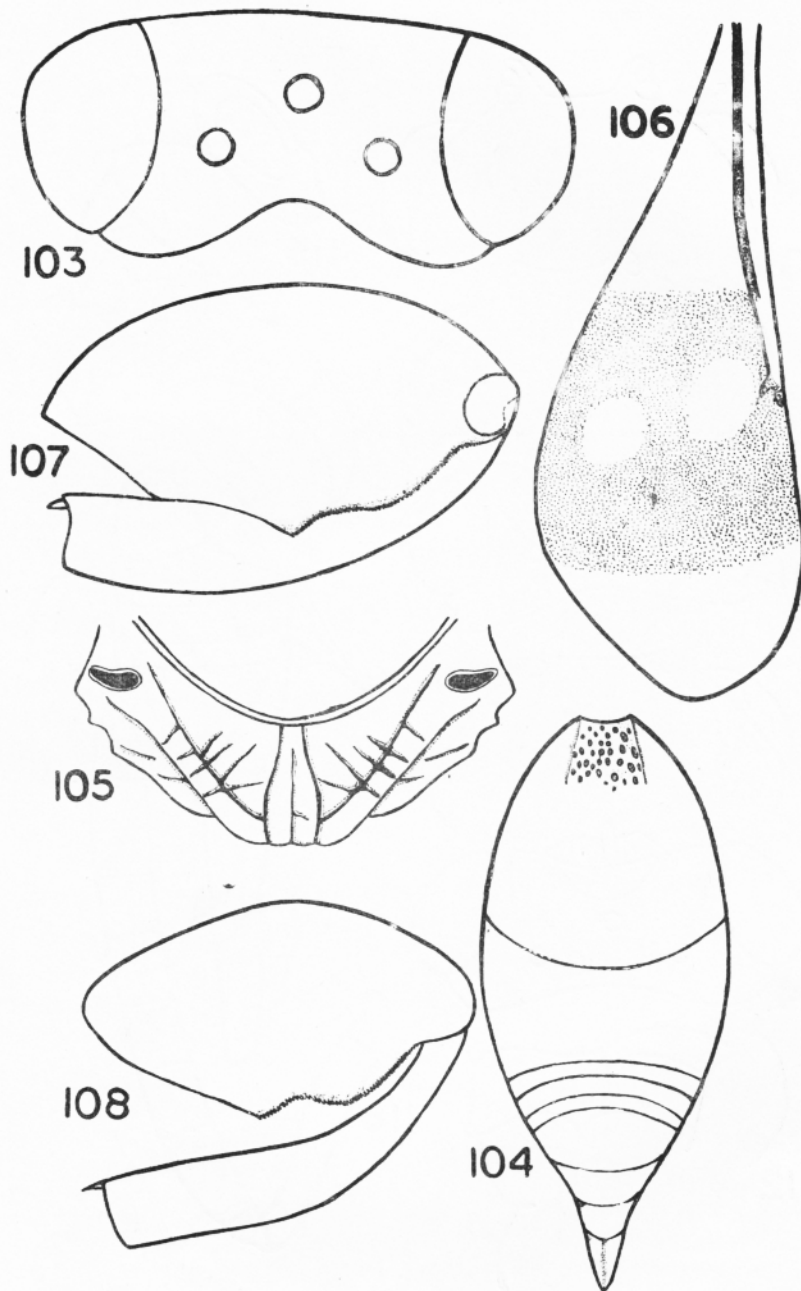
Figs. 84-87: *Hockeria*. 84-85. *anupama* sp.nov. female: 84, head: 85, :cutellum 85:*tristis* (Strand): Female: propodeum. 87:*menoni* (Narend.): Female:head and body.



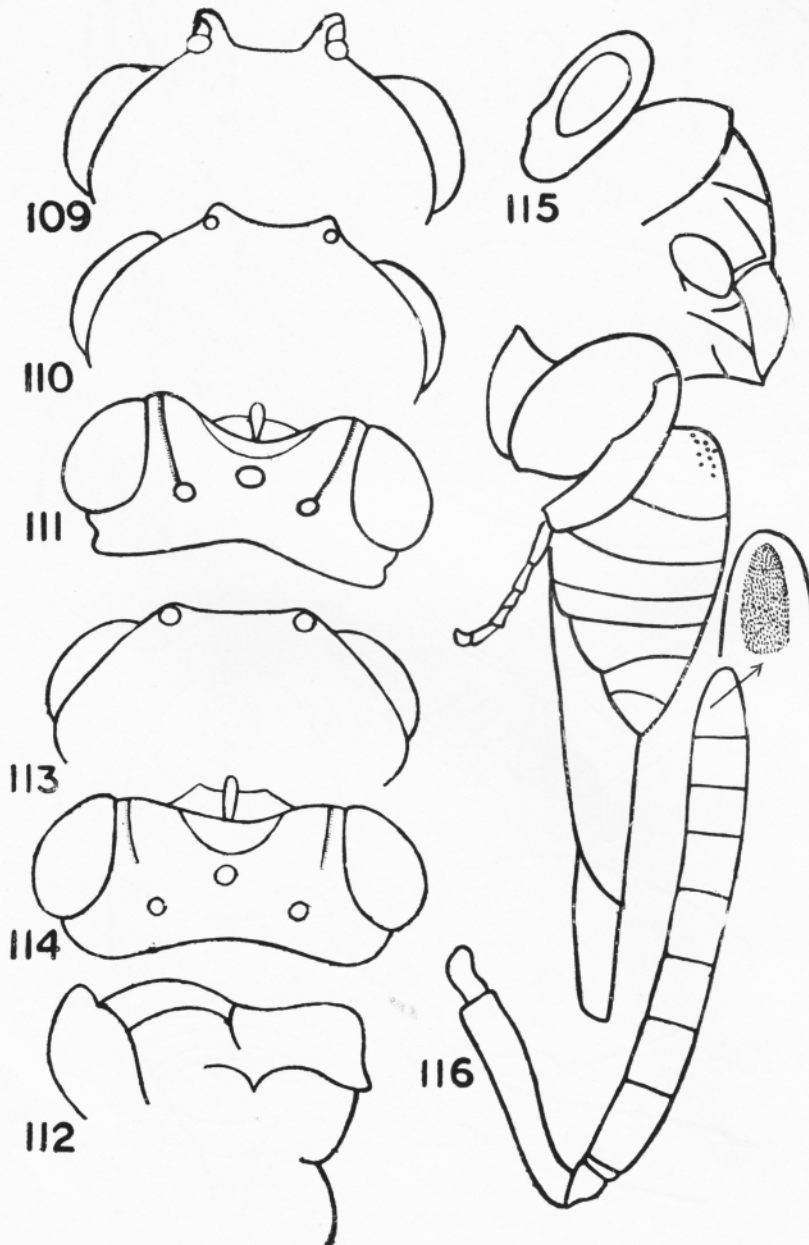
Figs. 88-94: *Hockeria*. 88-89: *carinata* sp.nov. Female: 88, forewing; 89, propodeum. 90-91: *grisselli* sp.nov.: Female: 90, apex of scutellum; 91, forewing. 92-94: *opisinae* sp.nov. Female: 92, forewing; 93, propodeum; 94, hind femur & tibia.



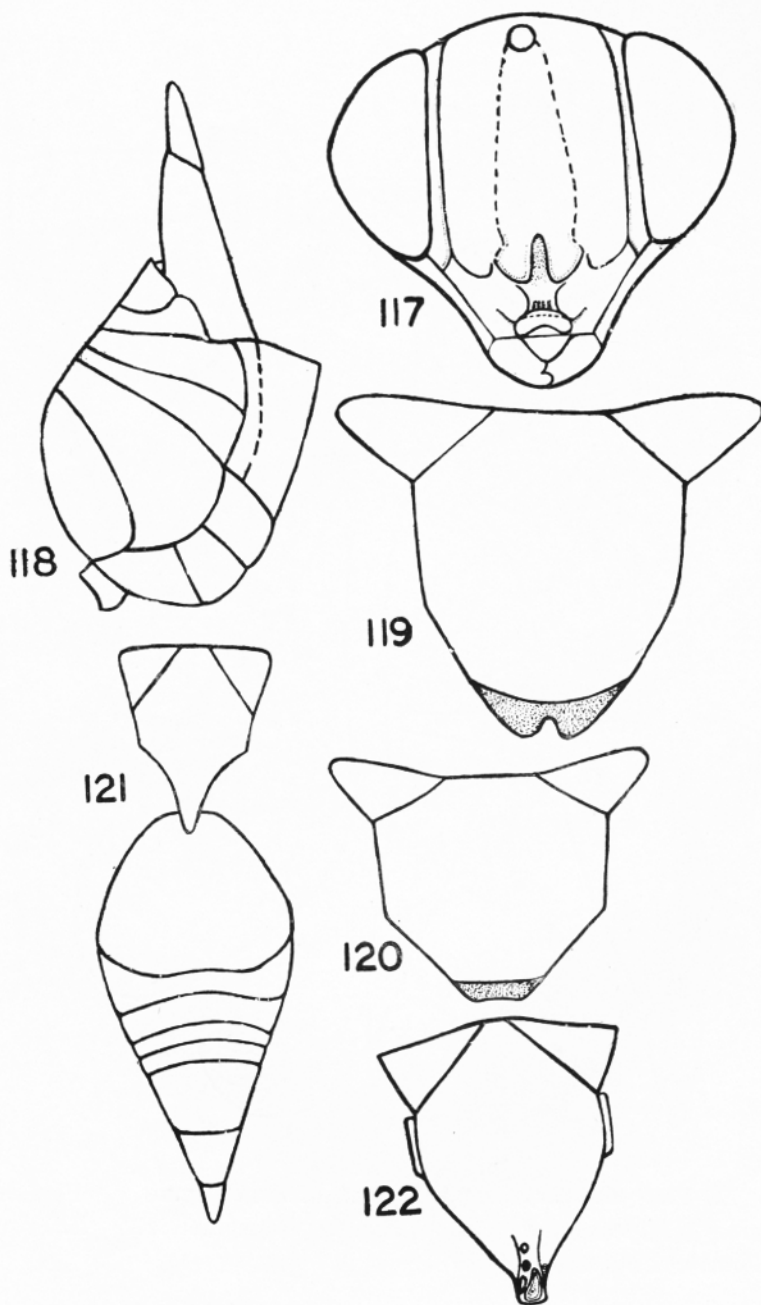
Figs. 95-102: *Hockeria*. 95-96: *aligarhensis* R. & F. Female: 95, propodeum; 96, hind femur. 97-98: *hayati* sp.nov. Female: 97, propodeum; 98, hind femur & tibia. 99-100: *nipponica* Habu: Female: 99, propodeum; 100, hind femur & tibia. 101-102: *fronta* sp.nov.: Female: 101, head profile; 102, head dorsal view.



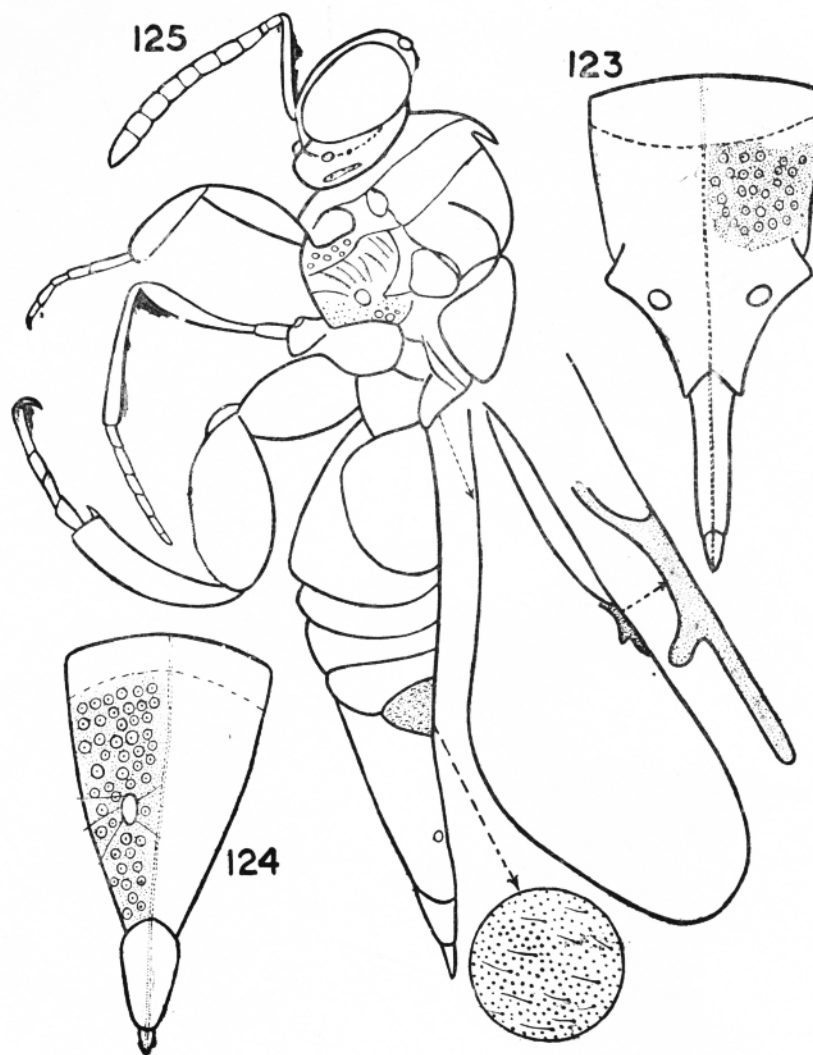
Figs. 103-108: *Hockeria*. 101-104: *assamensis* sp.nov.: Female: 103, head; 104, gaster. 105-106: *callipteroma* sp.nov.: Female: 105, propodeum; 106, forewing. 107: *gibsoni* sp. nov.: Female: hind femur & tibia. 108: *guptai* sp.nov.: Female: hind femur & tibia.



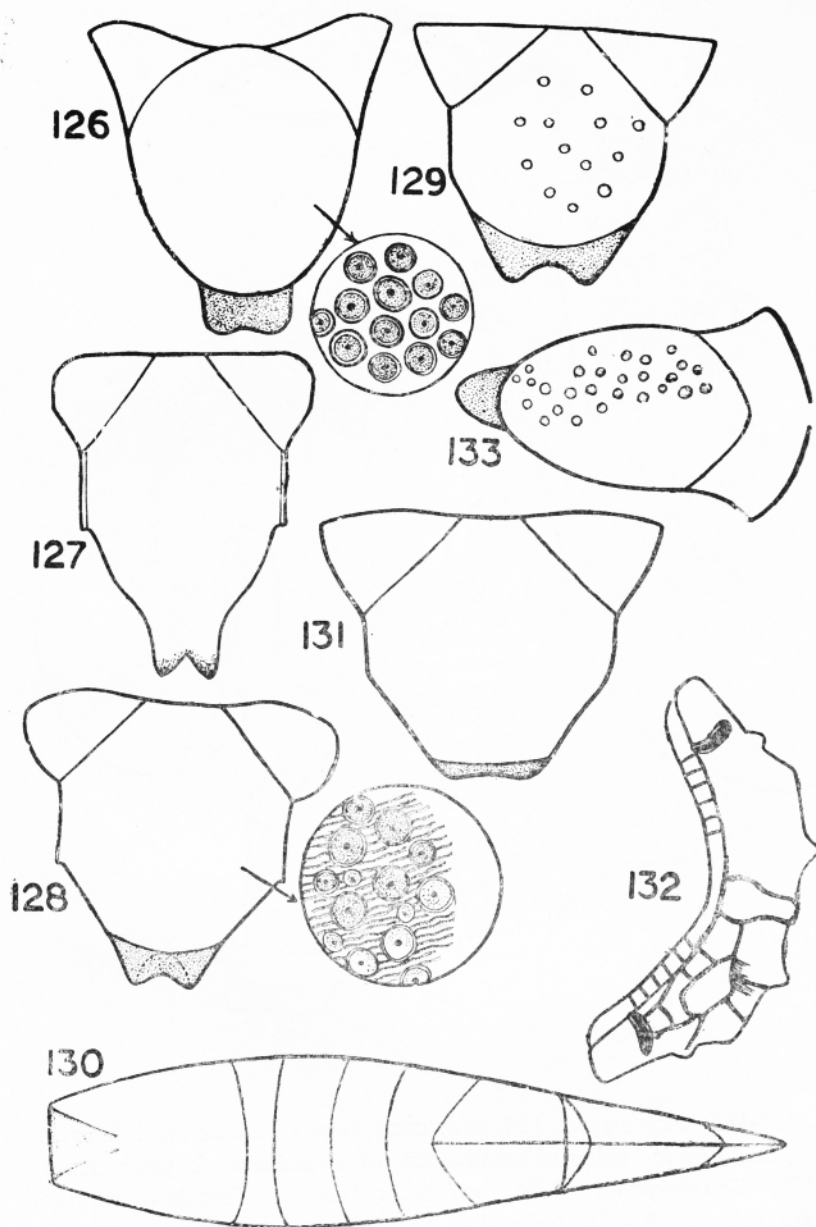
Figs. 109-114: *Uga*. 109. *javanica* Kerrich:Female: head. 110-112 *menoni* Kerrich Female:110, head posterior view; 111, head dorsal view; 112, thorax profile. 113-114: *sinensis* Kerrich:Female: 113, head posterior view; 114, head dorsal view. 115-116: *Rhynchochalcis pruinosa* (Cam.): Female: 115, head & body profile in part; 116, antenna.



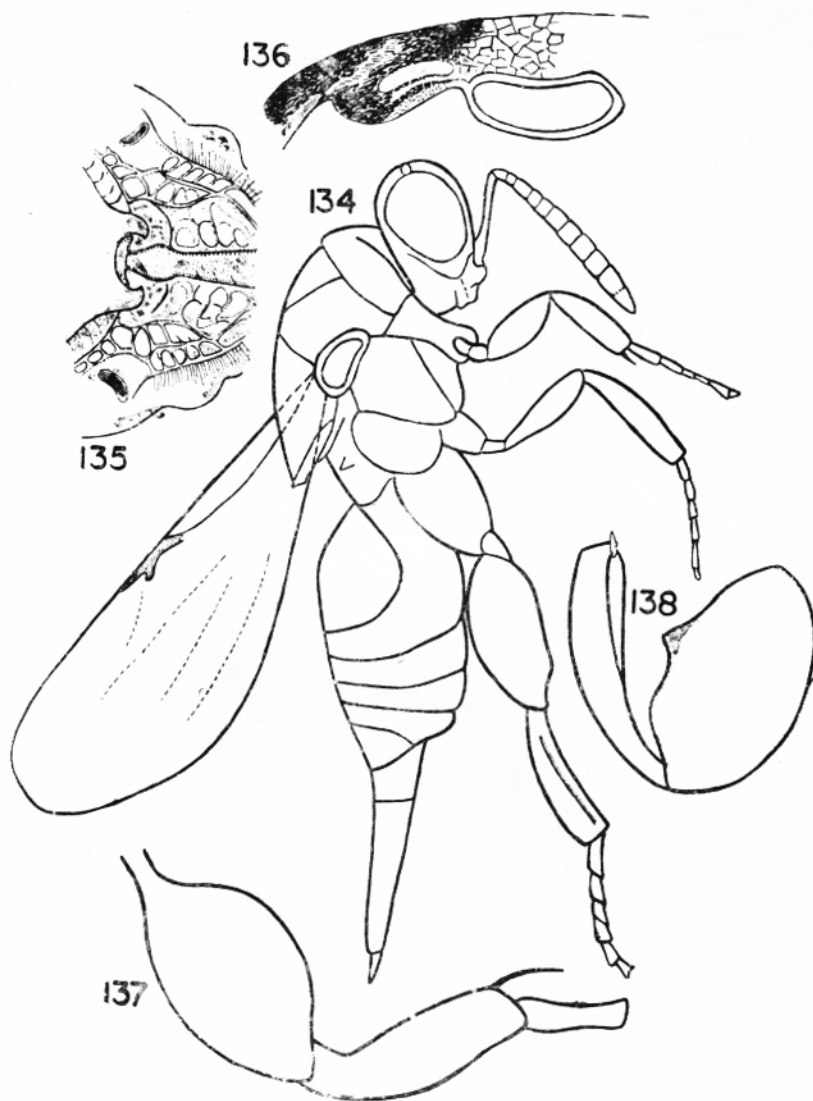
Figs.: 117-120: *Rhynchochalcis*. 117-118: *thresiae* sp.nov.:Female: 117, head front view; 118, gaster. 119: *lankana* sp.nov. Female; apex of scutellum. 120: *brevicornuta* (Strand):Female:scutellum. 121: *Tainariella malabarica* sp.nov.: Female: scutellum & gaster. 122: *Oxycoryphe padmasenani* sp.nov.: Female: scutellum.



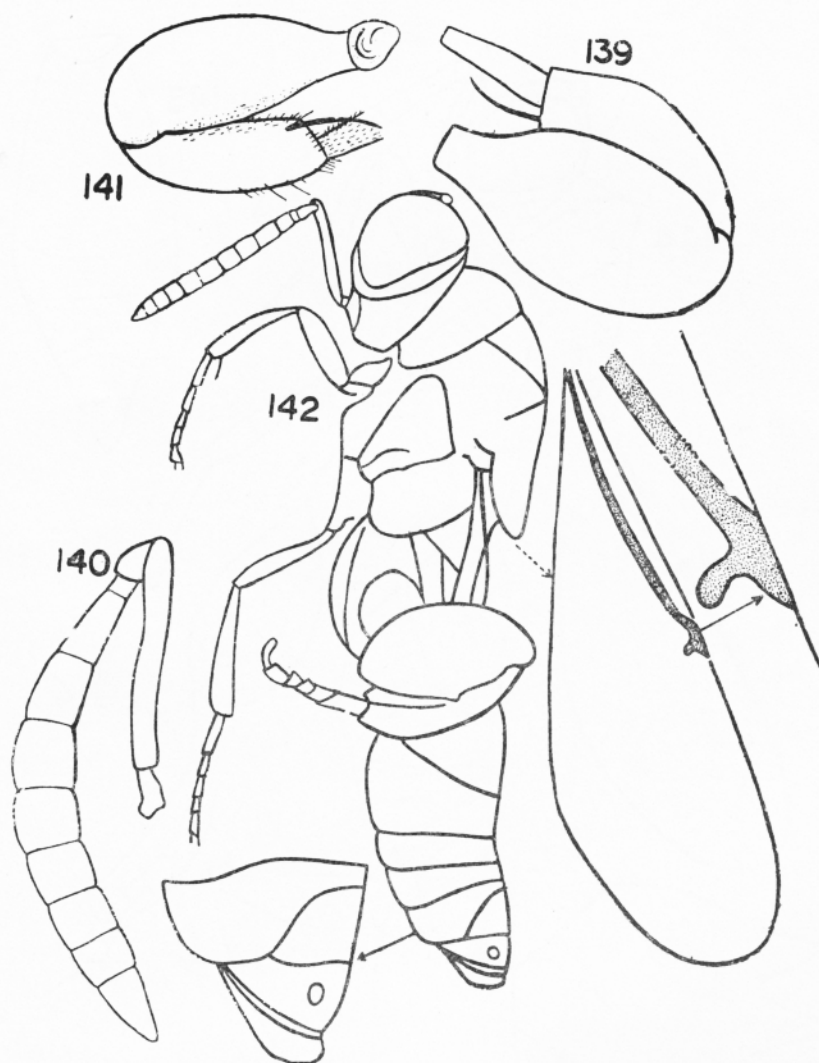
Figs. 123-125: *Oxycoryphe*. 123. *padmasenani* sp.nov.: Female: epipygium. 124: *sumodani* sp.nov.: Female: epipygium. 125: *tenax* sp. nov.: Female: head & body profile.



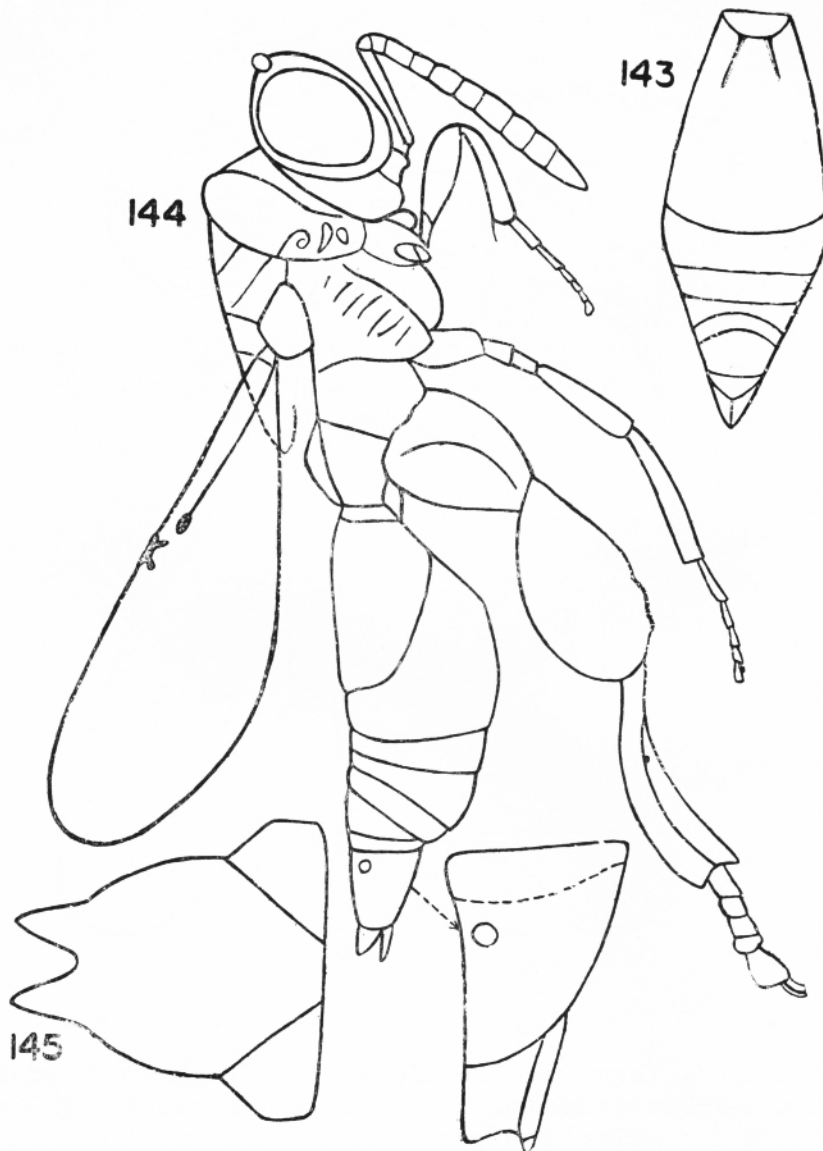
Figs. 126-133: *Oxycoryphe*. 126: *tenax* sp. nov.: Female: apex of scutellum. 127: *scutellatus* sp. nov.: Female: scutellum. 128: *thresiae* sp. nov. Female: apex of scutellum. 129-130 *glabrum* sp. nov. Female: 129, apex of scutellum; 130, gaster. 131-132: *komui* sp. nov.: Female: 131, apex of scutellum; 132, propodeum. 133, *nitida* (Cam.): Female: scutellum.



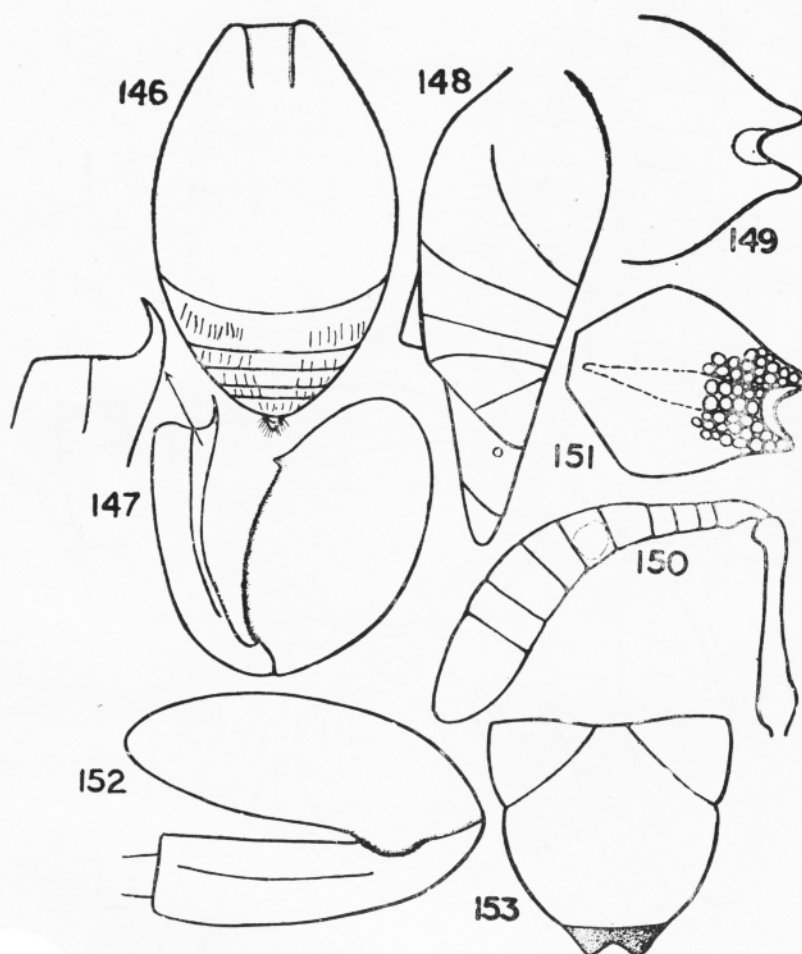
Figs. 134-135: *Oxycoryphe*. 134: *edentata* sp.nov.: Female: head & body. 135: *maculipennis* (Masi): Female: apex of scutellum & propodeum. 136-138: *Tanycoryphus*. 136: *forticaudis* (Cam.): Female: stigmata of sixth tergite. 137-138: *townesi* sp.nov.: Female: 137, front leg; 138, hind femur & tibia.



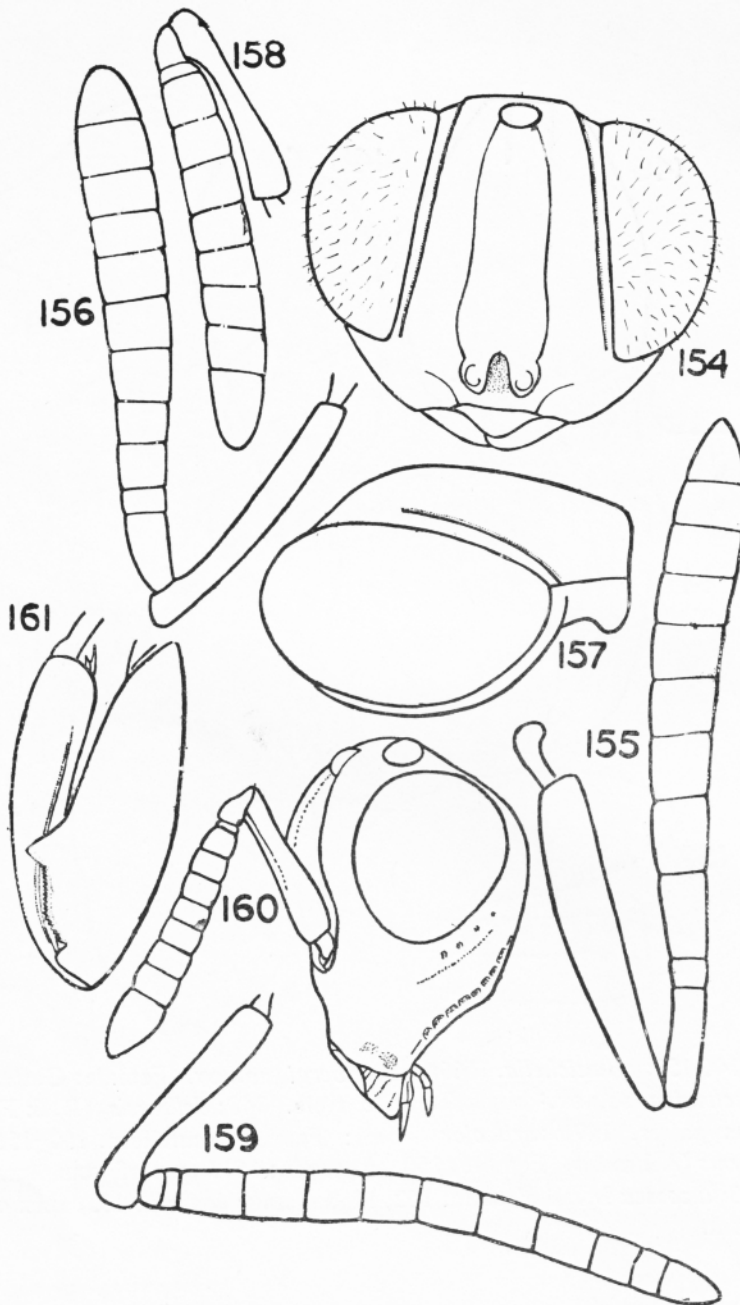
Figs. 139-141: *Tancoryphus*. 139: *shonus* sp.nov.: Female: fore femur & tibia. 140-141: *merisicornis* (Masi): Female: 140, antenna; 141, fore leg. 142: *Thresiaella caudata* sp.nov.: Female: body profile & apex of gaster.



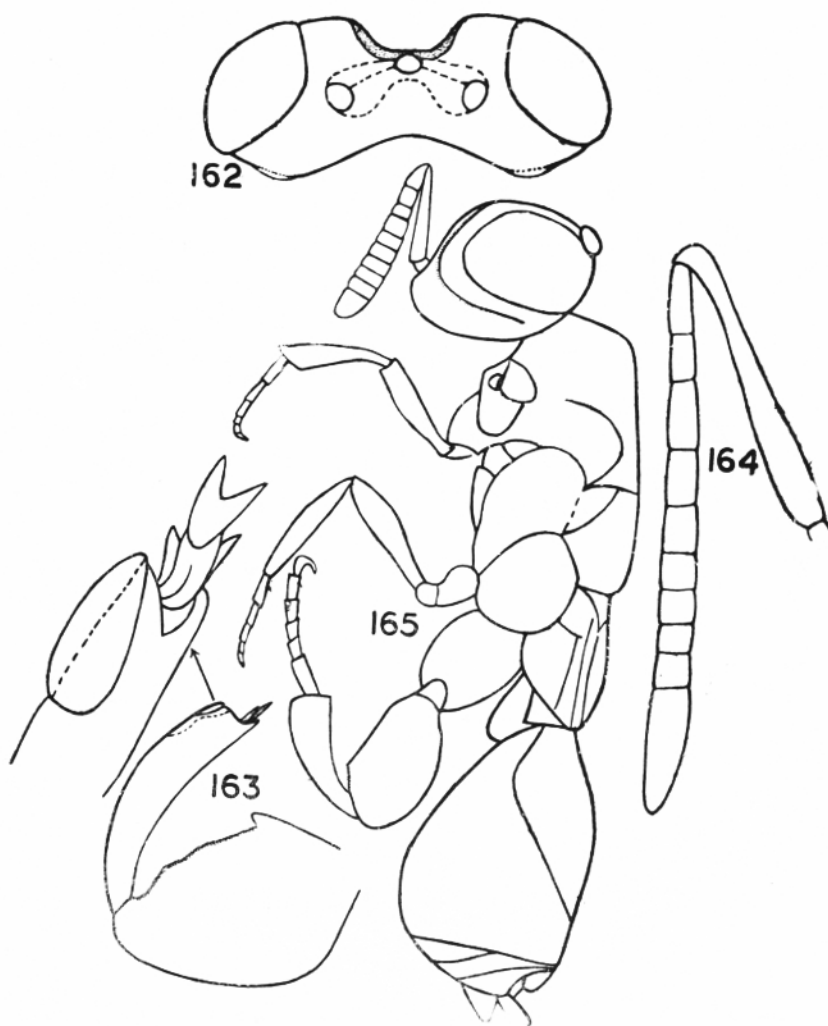
Figs.: 143 *Thresiaella bicarinata* sp.nov. Female:gaster. 144: *Sthulapada padata* sp.nov. Female : head & body profile. 145 : *Haltichella achterbergi* sp.nov. Female: scutellum.



146-153: *Haltichella*. 146: *achterbergi* sp.nov. Female: Gaster. 147: *chonica* sp.nov.: hind femur & tibia. 148: *delhensis* (R. & F.) Female: gaster. 149: *variicolor* Masi: Female: scutellum. 150-151: *clavicornis* (Ashmead): Female: 150, Antenna; 151, apex of scutellum. 152-153: *luzonica* Masi: Female: 152, hind femur & tibia; 153, apex of scutellum.



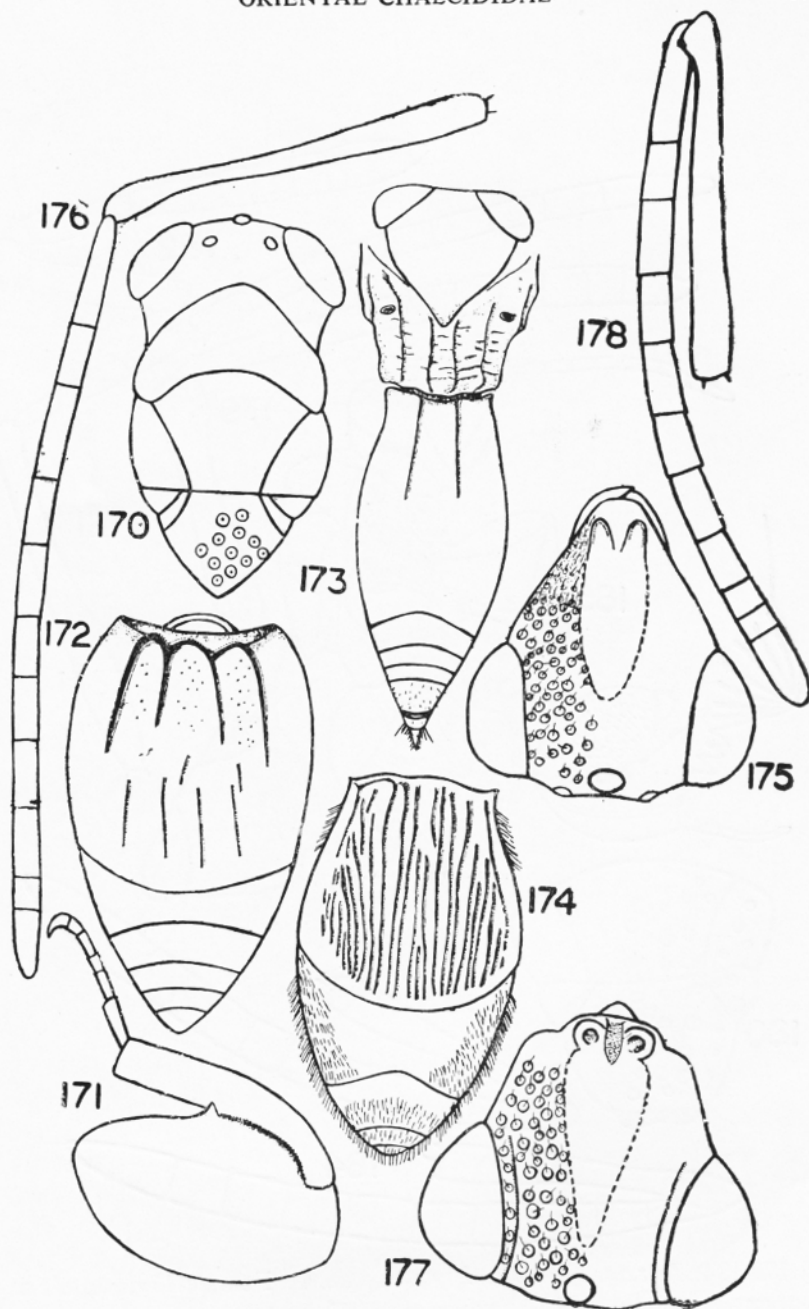
Figs.: 154-159: *Neohaltichella* gen.nov.: 154-155: *thresiae* sp.nov.: Female: 154, head front view; 155, antenna. 156: *nitigastrea* sp.nov.: Female: antenna. 157-158: *brevigena* sp.nov.: Female: 157, head profile; 158, antenna. 159: *nilgirica* sp.nov.: Female: antenna. 160-161, *Tropimeris monodon* Boucek: Female: 160, head profile; 161, hind femur and tibia.



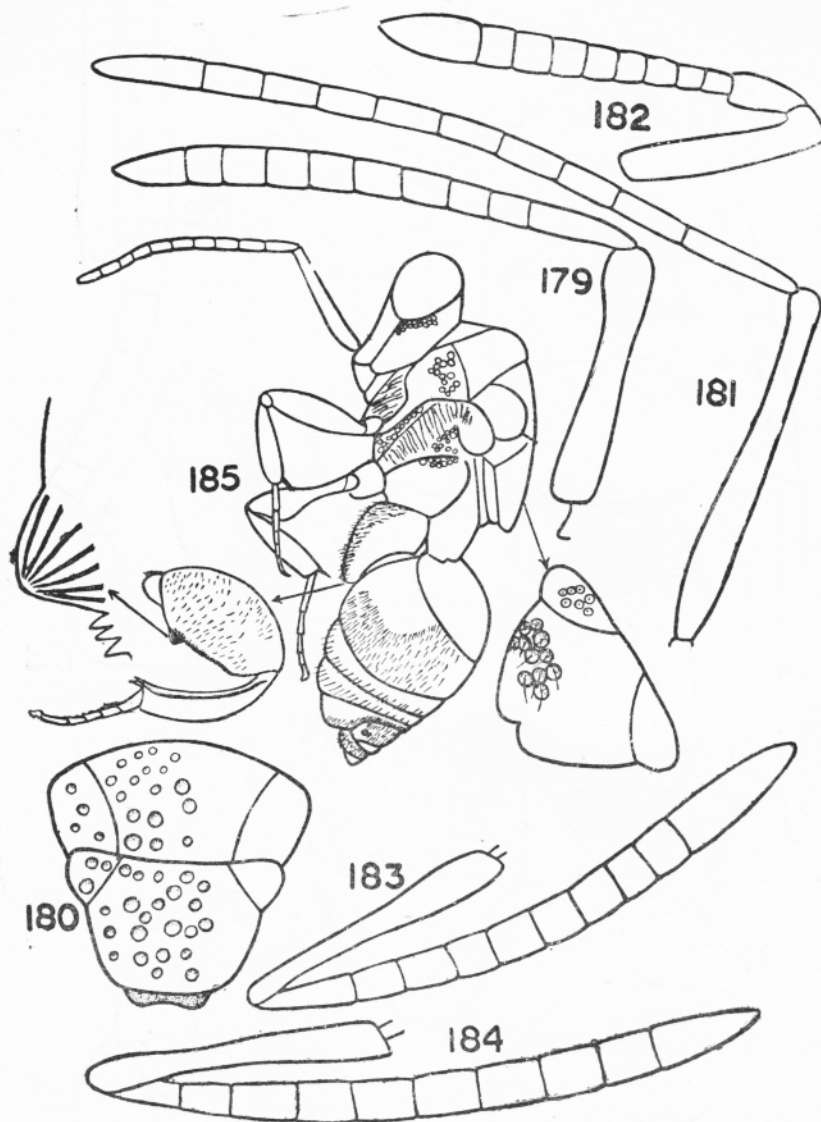
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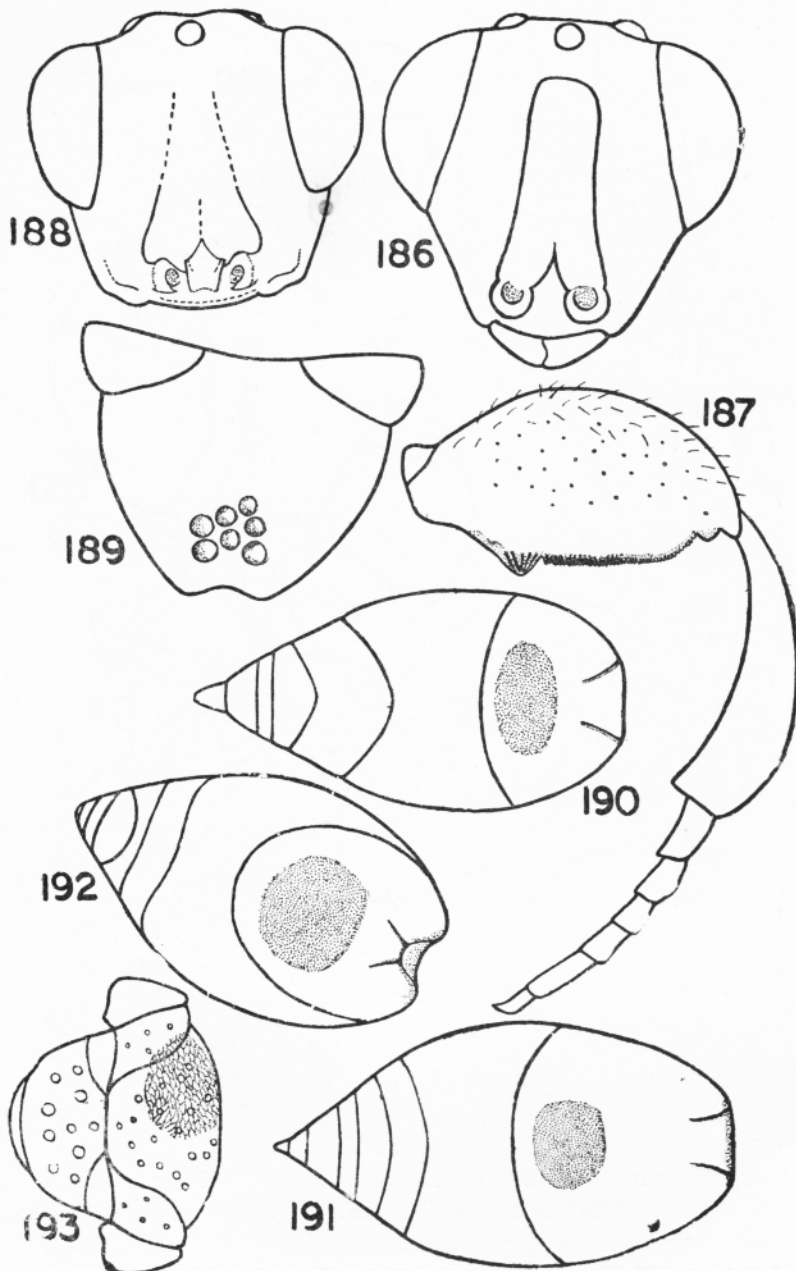


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182: *ligustica* Masi: Female: antenna. 183: *crassicornis* (Masi): Female: antenna. 184: *ghanii* Habu: Female: antenna. 185: *Psilochalcis carinigena* (Cam): Female: body profile.



Figs. 186-188: *Psilochalcis*. 186: *keralensis* sp.nov. Female: 186, head; 187, hind leg. 188: *soudanensis* (Steff.): Female: head. 189-193: *Proconura*. 189-190: *emarginata* (R.&F.): Female: 189, apex of scutellum; 190, gaster. 191: *asiatica* sp.nov.: Female: gaster. 192: *philippinensis* (Masi): Female: gaster. 193: *minusa* sp.nov.: Female: mesoscutum & scutellum.

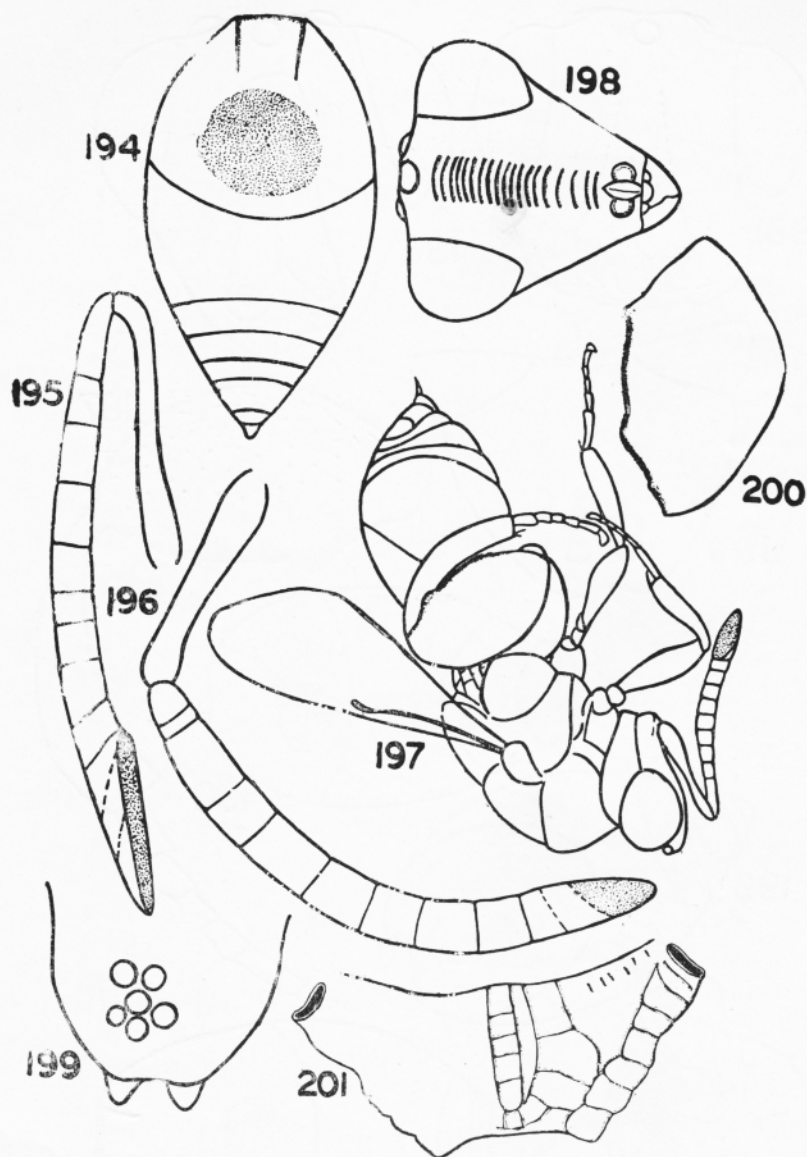
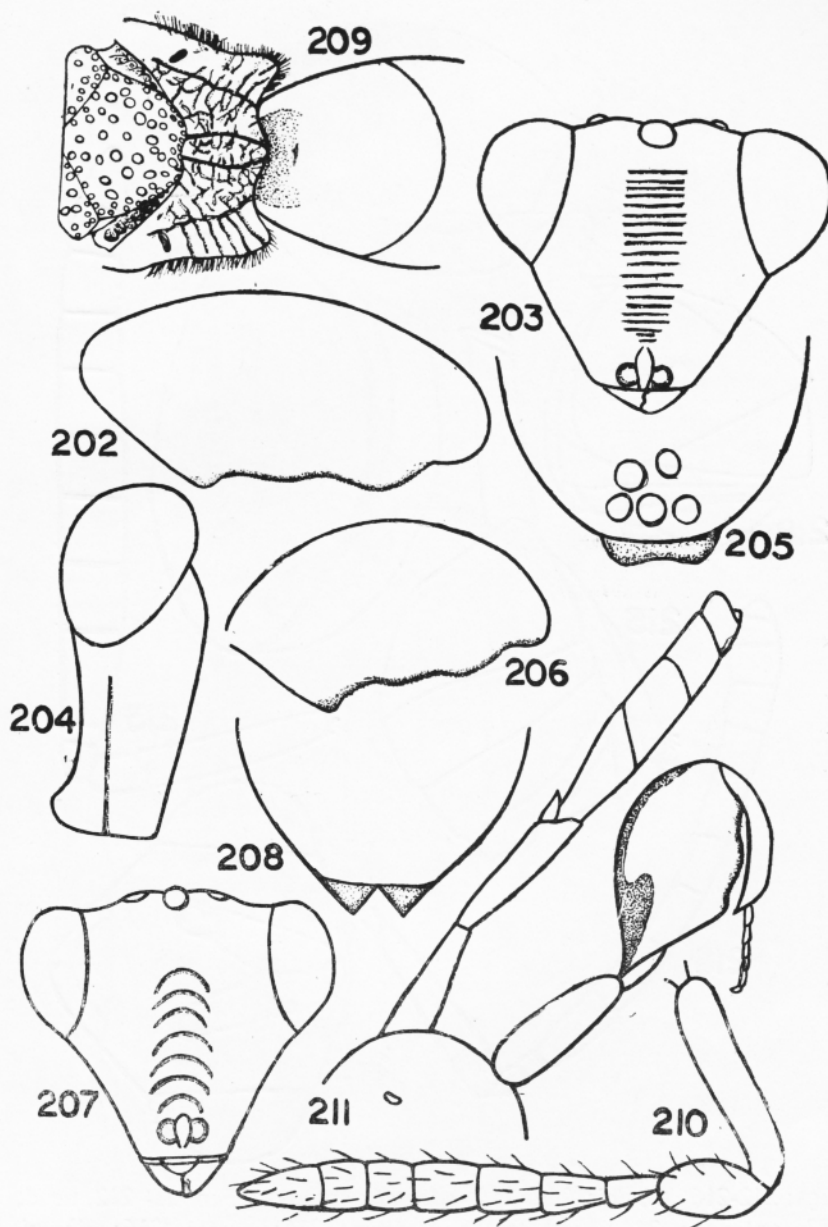
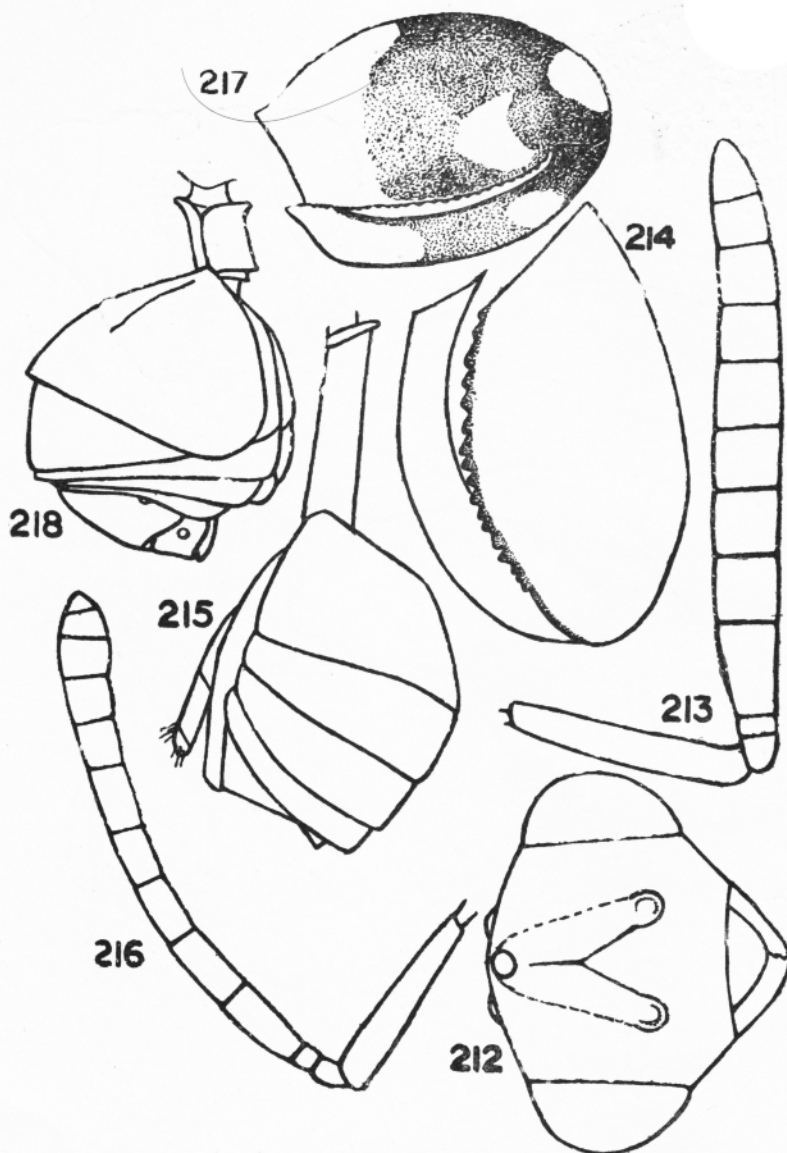


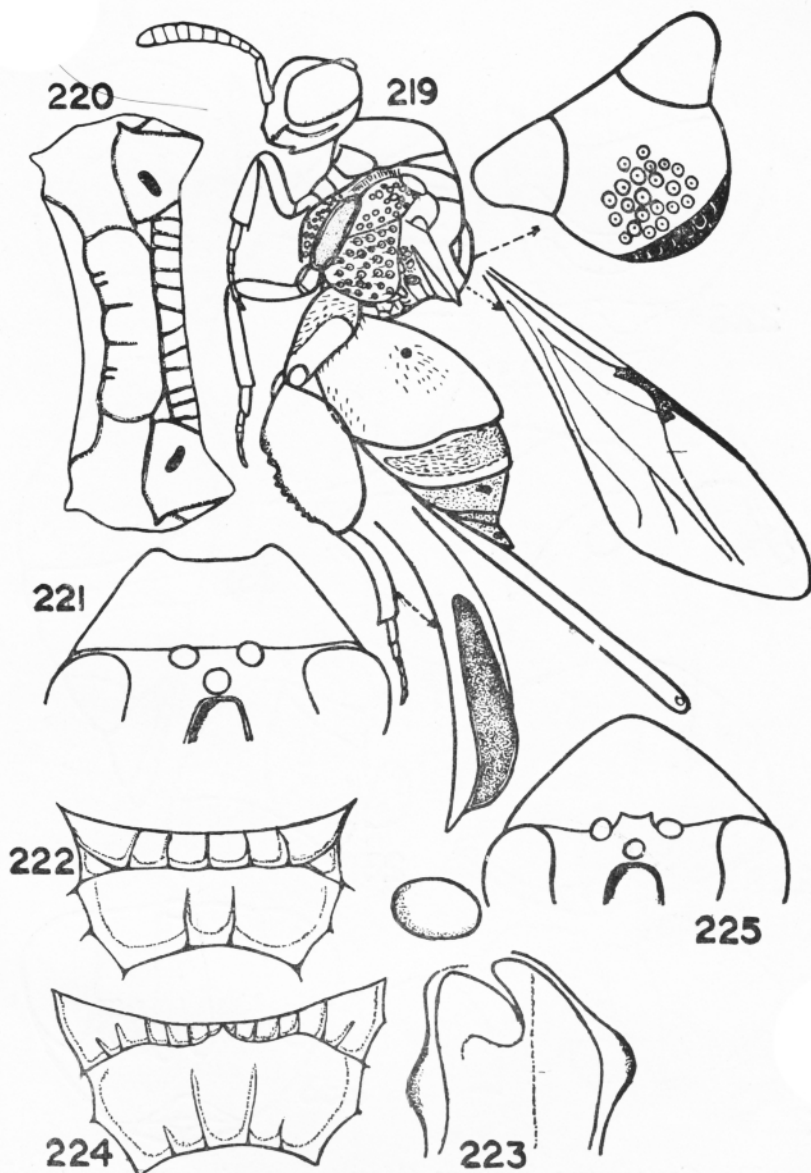
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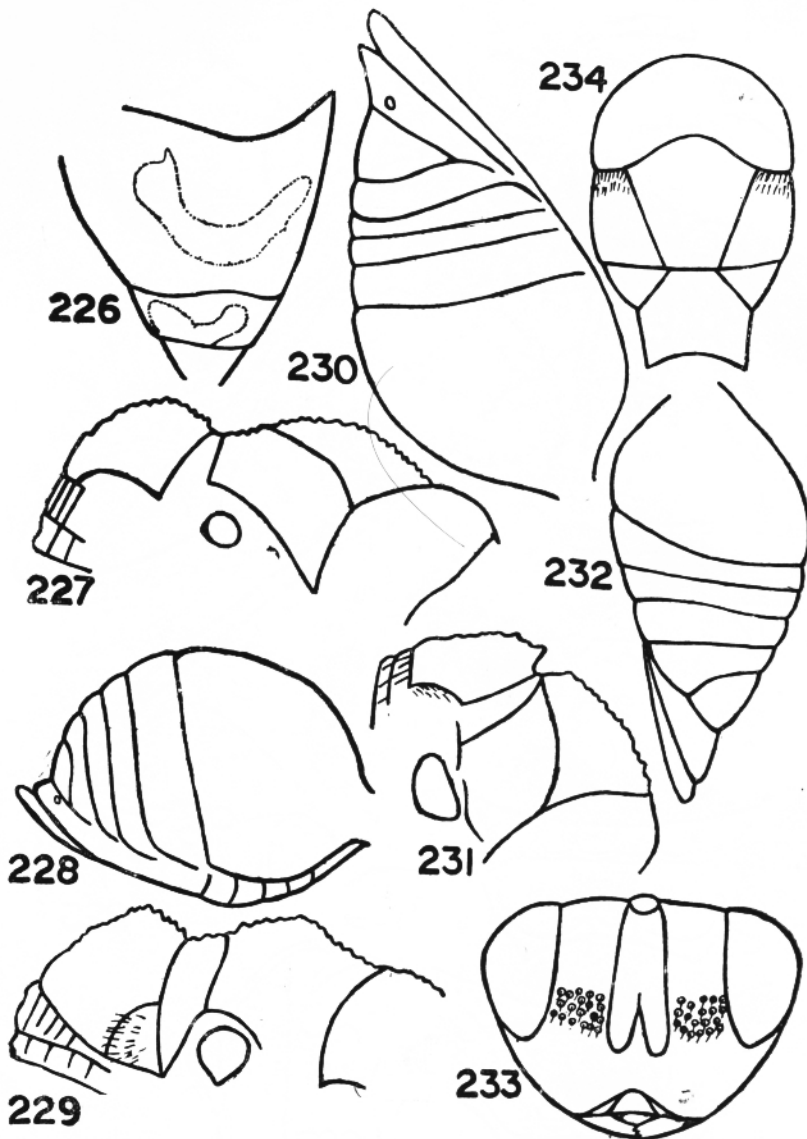
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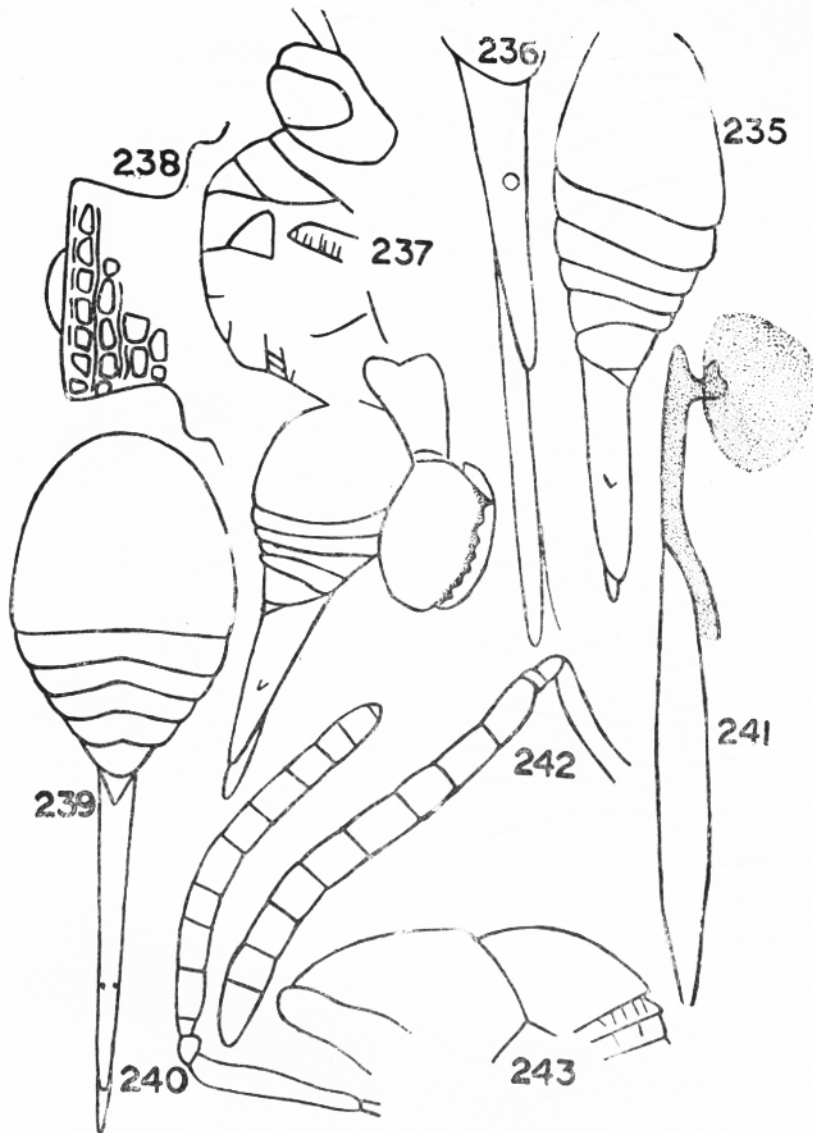
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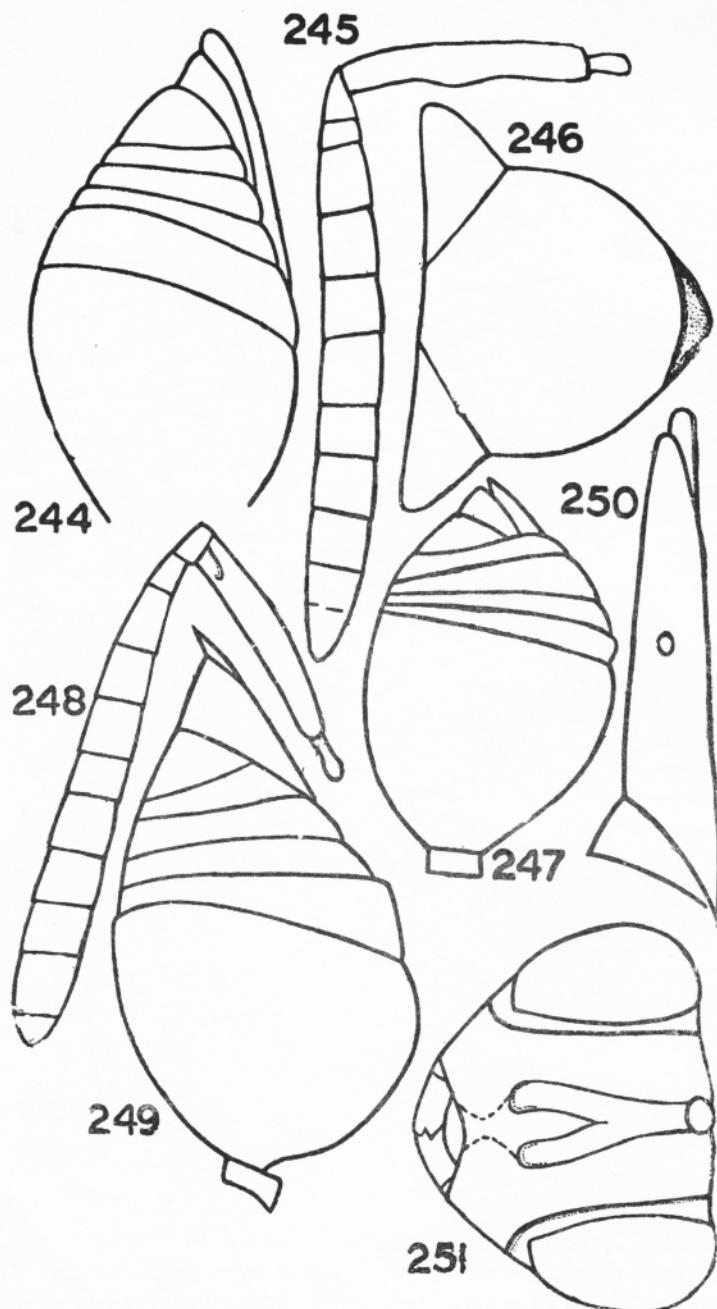
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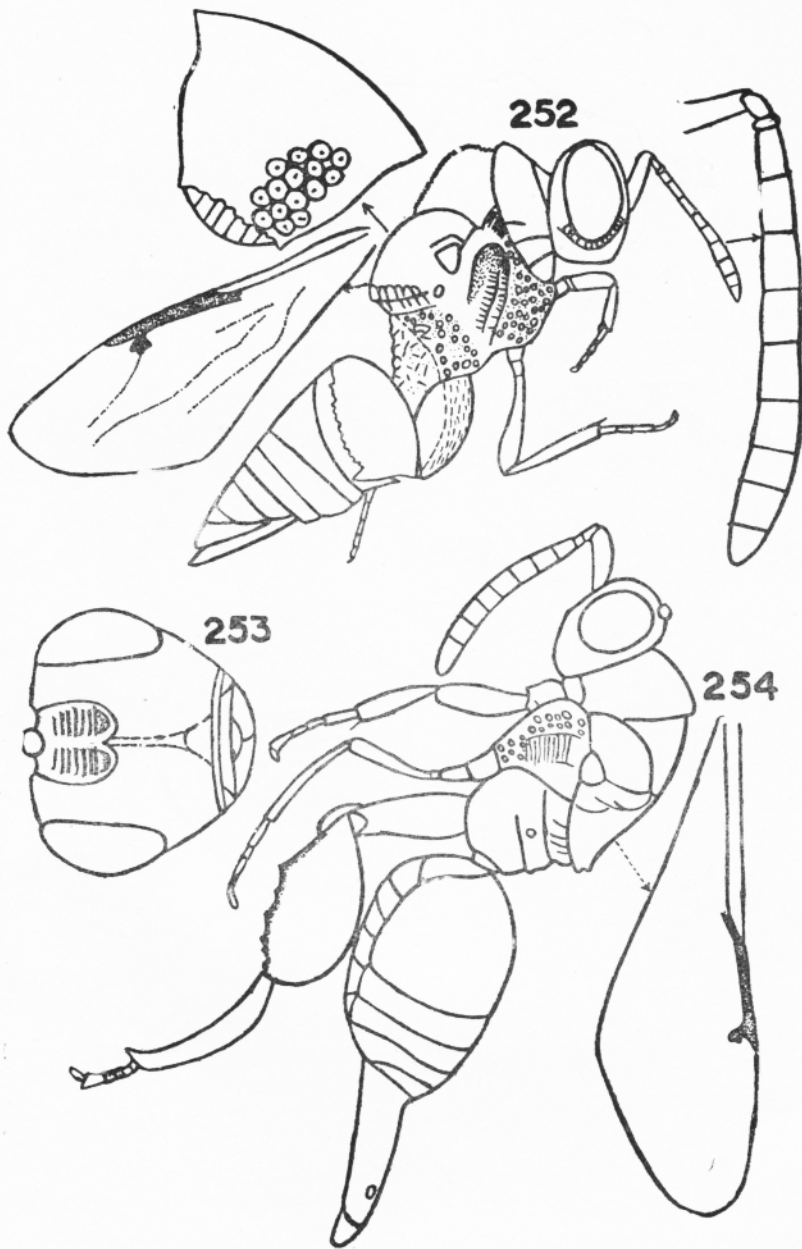
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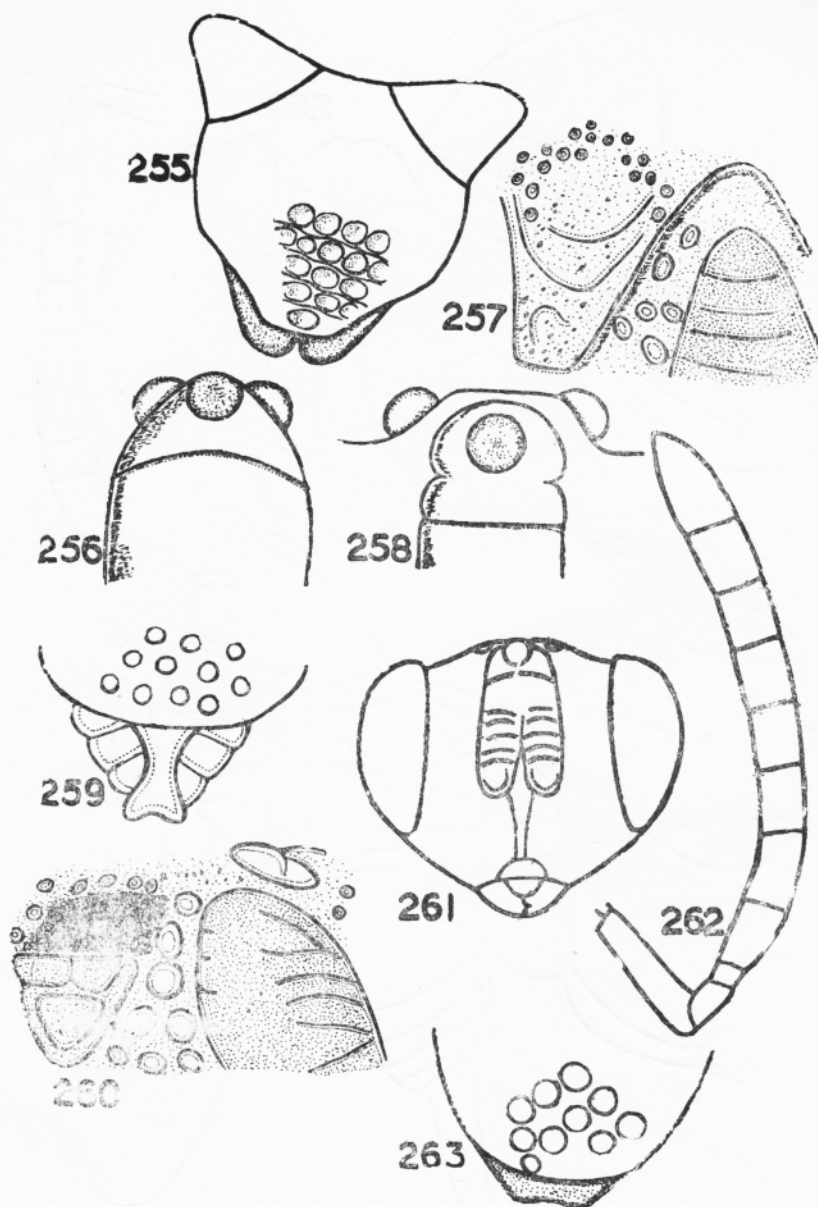
Figs. 235-243. *Trigonura*. 235: *gladiator* (Wlk): Female: gaster. 236: *tenuicaudis* Waterst.: Female: epipygium & ovipositor sheath. 237: *bakeri* Masi: Female: head & body profile. 238-239: *nishidai* sp. nov.: female: 238: apex of scutellum; 239, gaster. 240-241: *samarensis* Narend.: Female: 240, antenna; 241, forewing. 242-243: *javensis* Narend.: Female: 242, antenna; 243, thoracic notum.



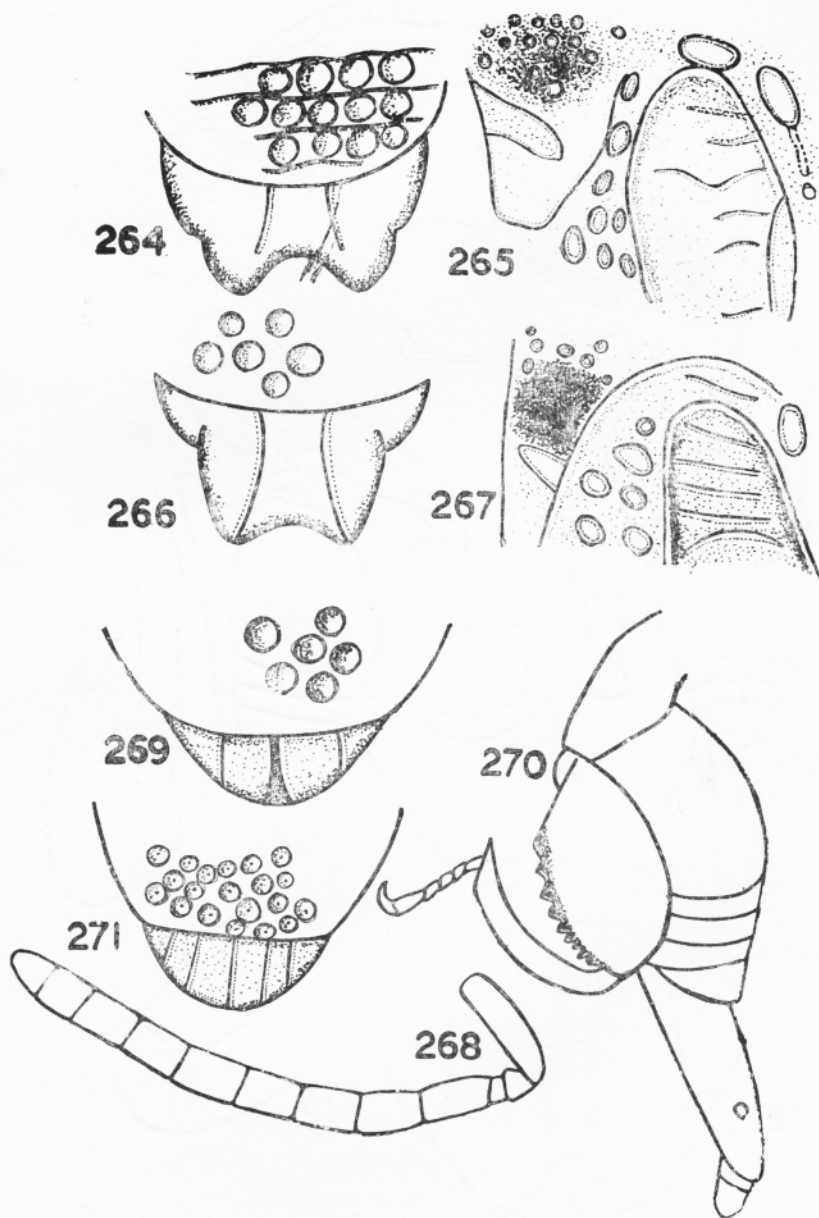
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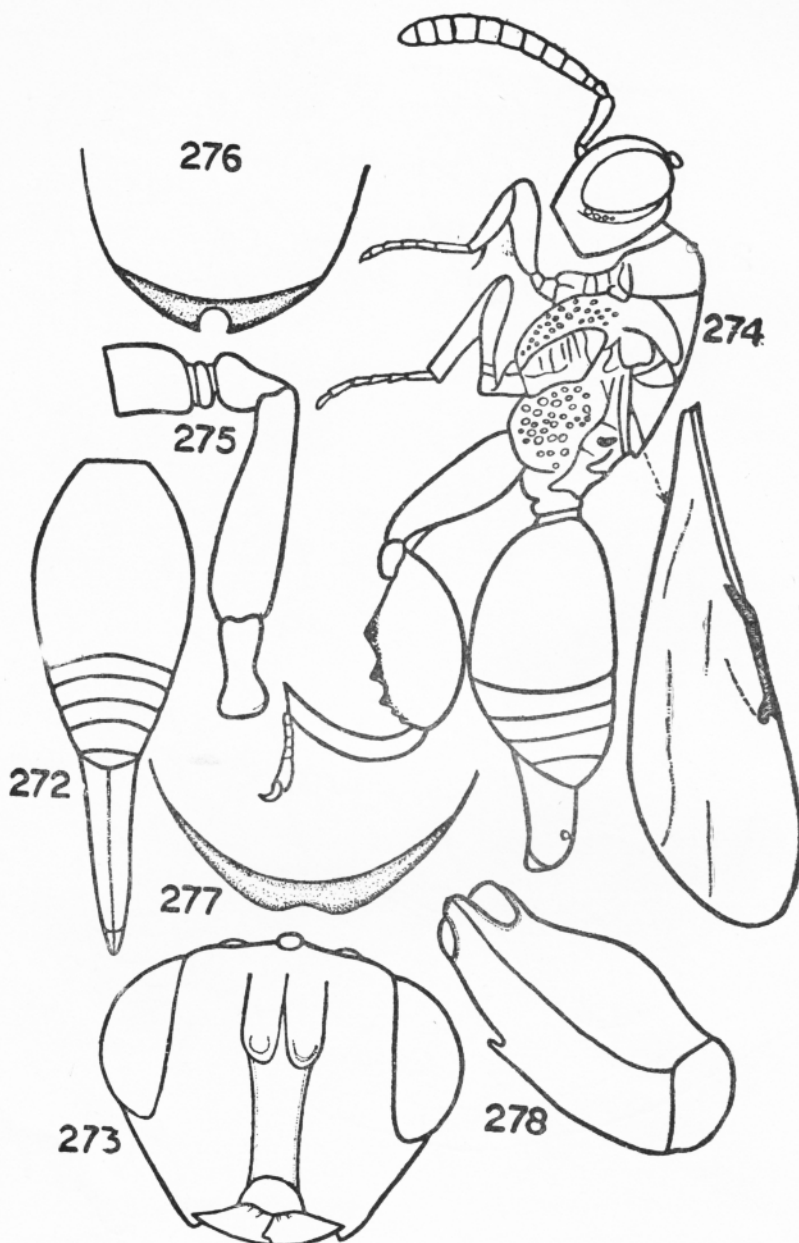
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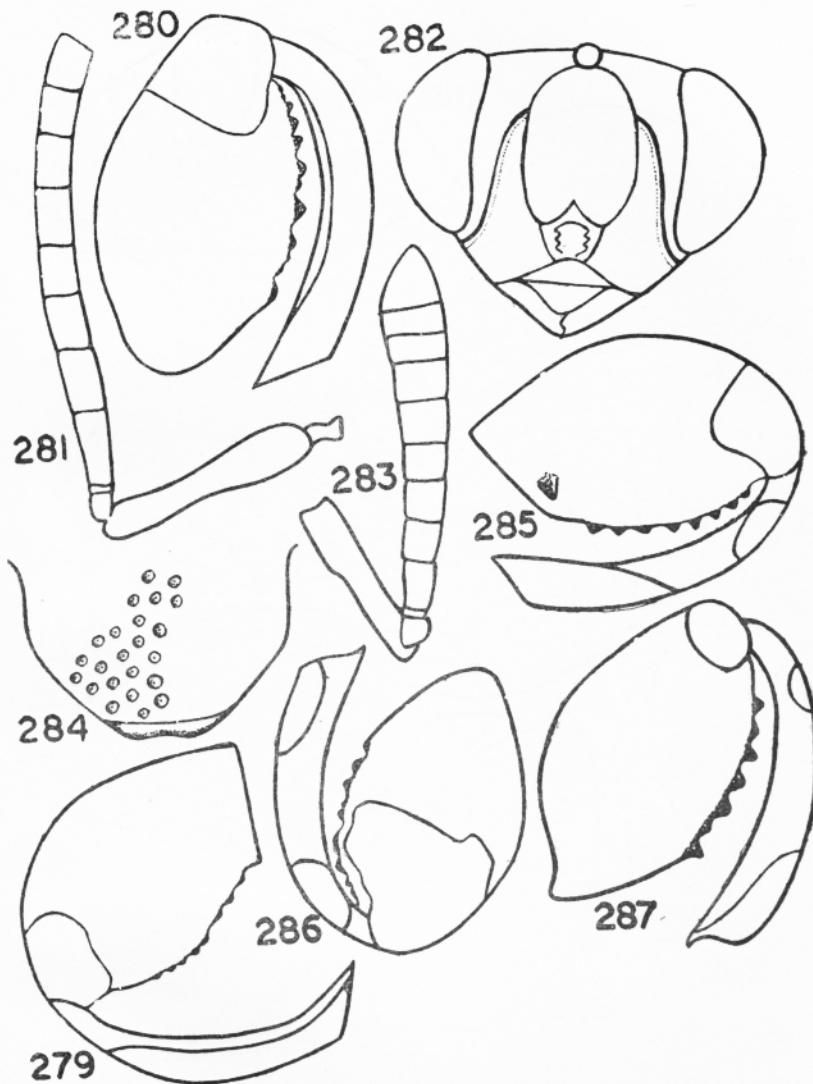
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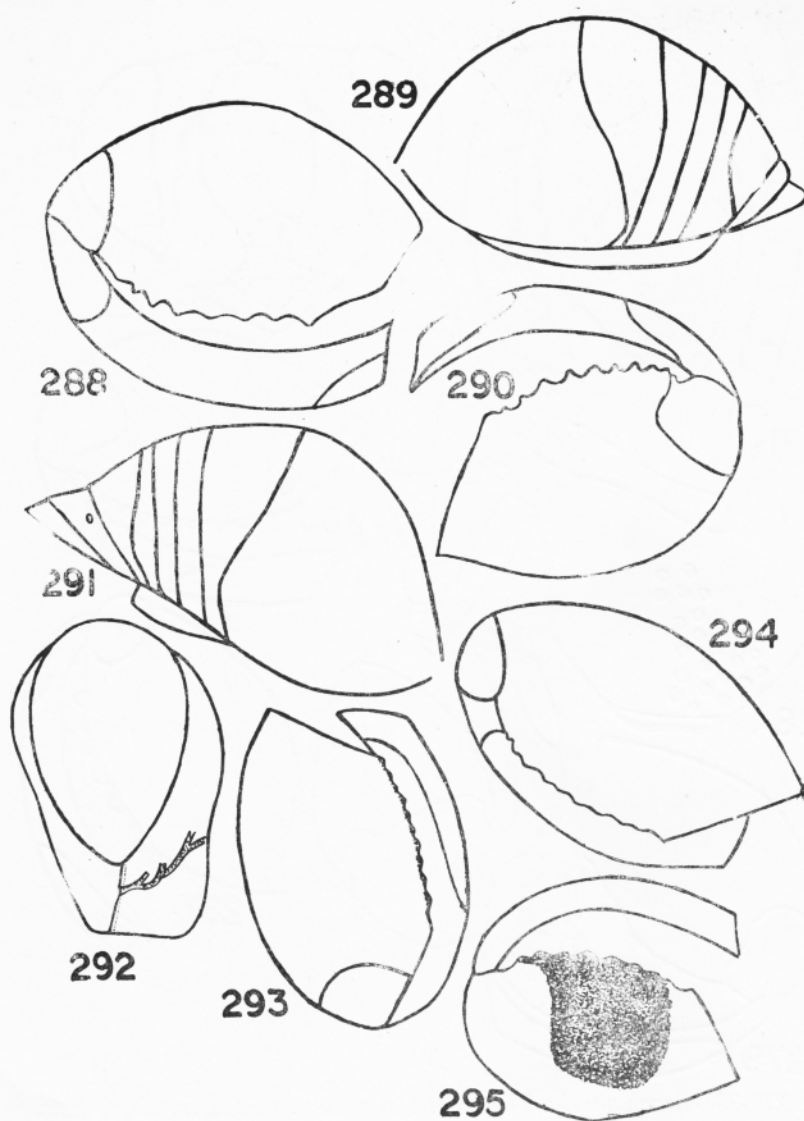
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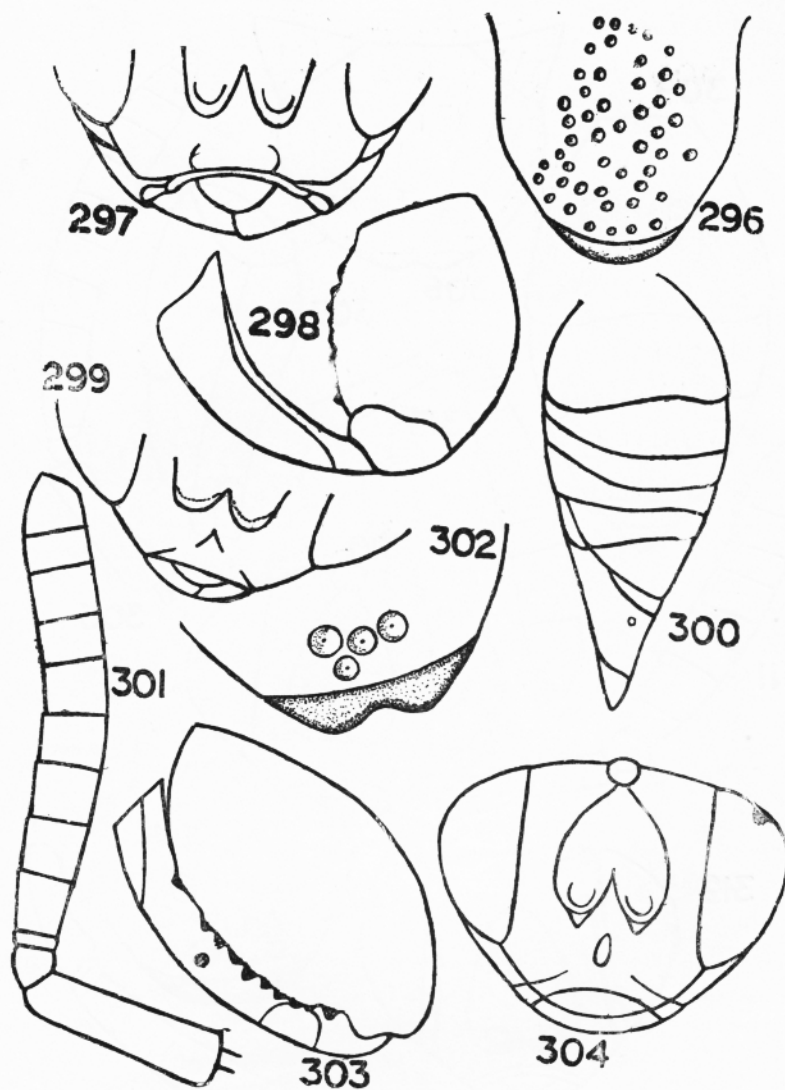
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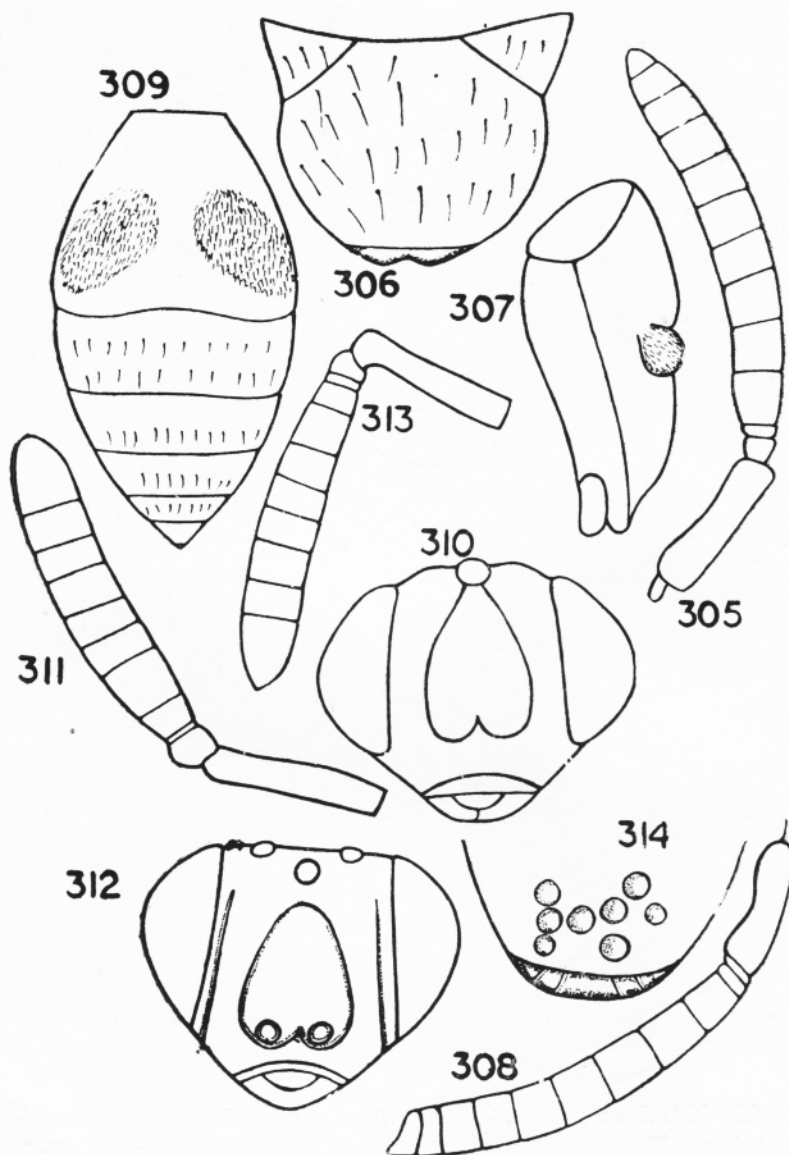
Figs. 279-287: *Brachymeria*. 279: *albotibialis* (Ash.): Female: hind femur & tibia. 280: *intermedia* (Nees): Female: hind femur & tibia. 281: *nursei* (Cam.): Female: antenna. 282: *scutellocarinata* J.N.J.: Female: head. 283: *thracis* (Crawford): Female: antenna. 284: *fulvitaris* (Cam.): Male: apex of scutellum. 285: *minuta* (Lin.): Female: hind femur & tibia inner view. 286: *calopepla* J.N.J.: Female: hind femur & tibia outer view. 287: *podagrica* (Fab.): Female: hind femur & tibia outer view.



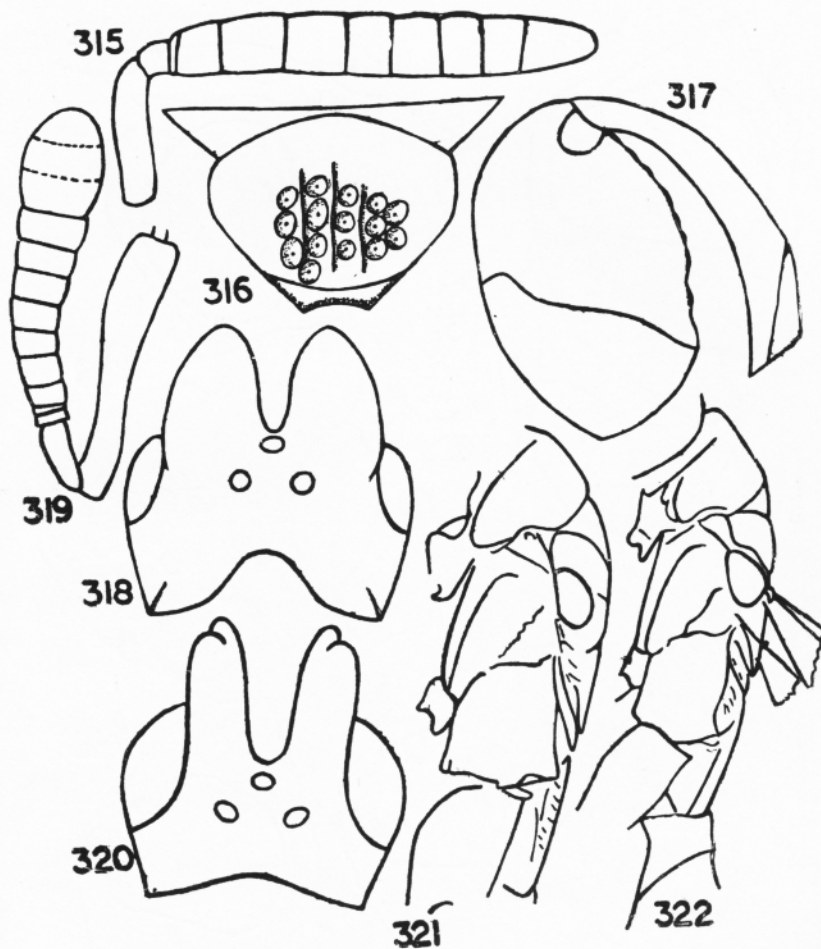
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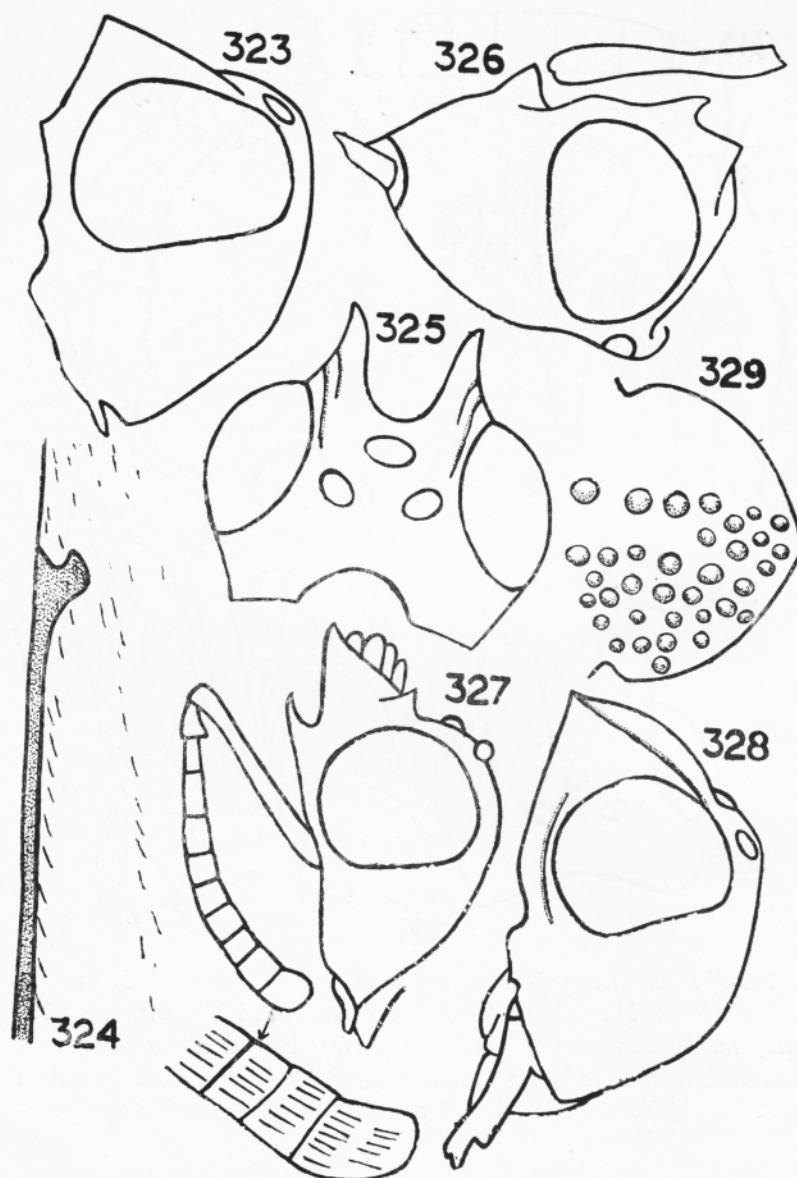
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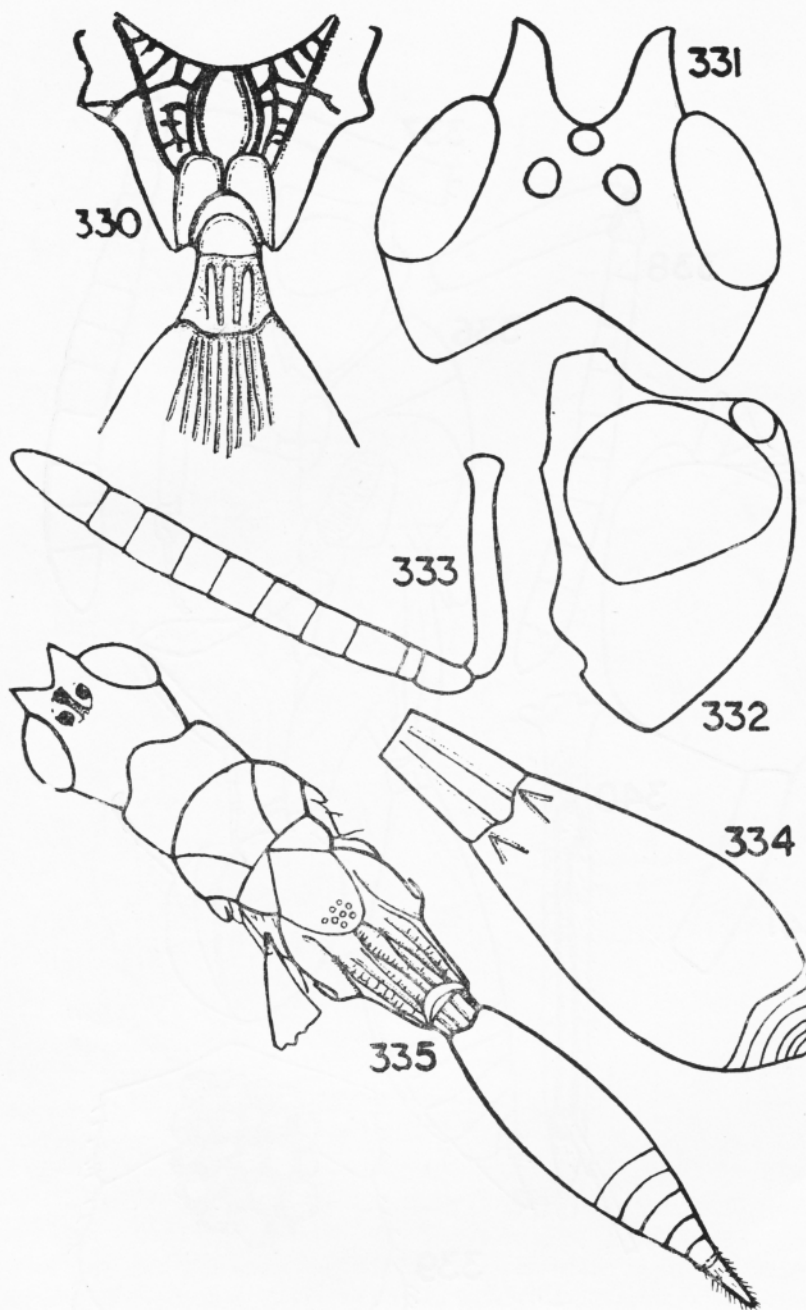
Figs. 305-314: *Brachymeria*. 305-307: *achterbergi* sp.nov.:Female: 305, antenna; 306, scutellum; 307, hind coxa. 308-309: *surekae* sp.nov. Female: 308, antenna; 309, gaster. 310-311: *manjerica* sp.nov. Female: 310, head; 311, antenna; 312-314: *salinae* sp.nov. Female: 312, head; 313, antenna; 314, apex of scutellum.



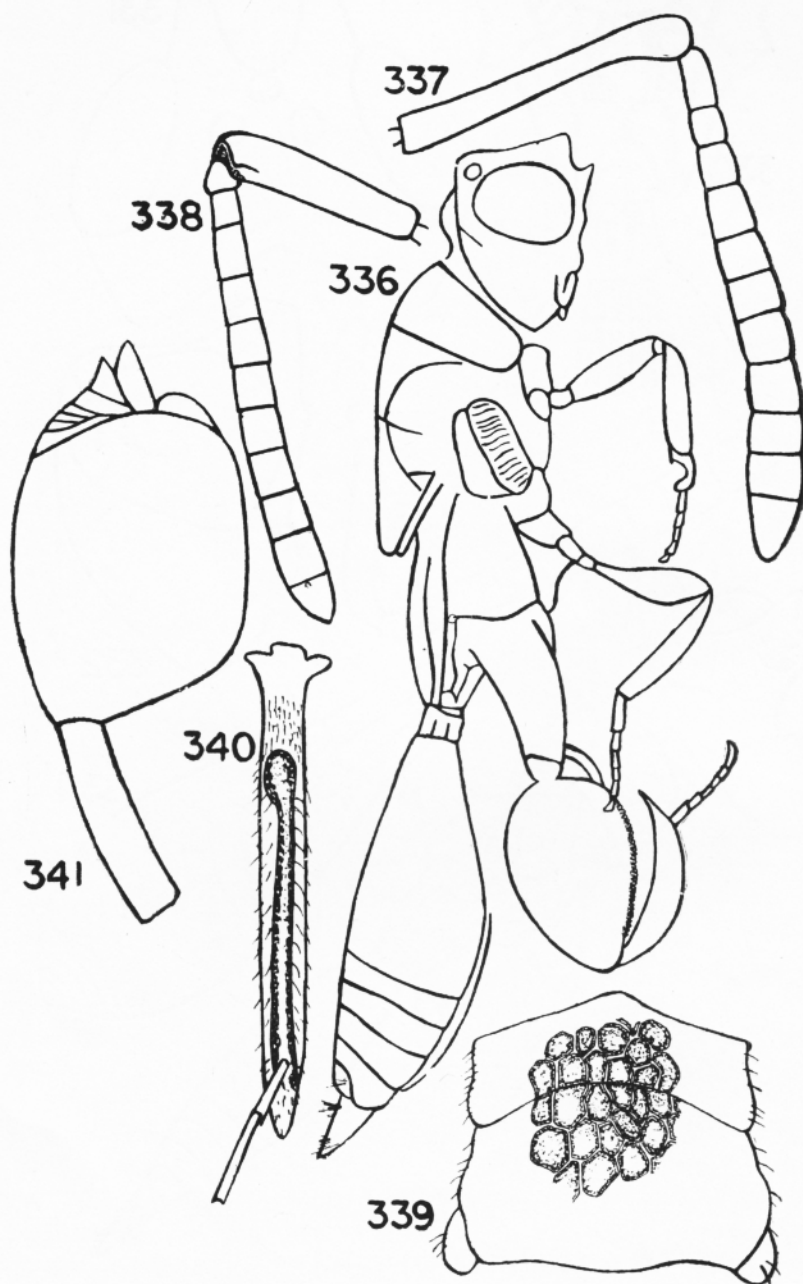
Figs. 315-317: *Brachymeria ambonensis* sp.nov. Female: 315, antenna 316, scutellum; 317, hind femur & tibia. 318-322: *Dirhinus*. 318: *himalayanus* West.: Female: head. 319: *claviger* Boucek & Narend. Female: antenna. 320: *anthracia* Wlk.: Female: head. 321: *banksi* Roh. profile of thorax. 322: *deplanatus* Boucek & Narend.: Female: profile of thorax.



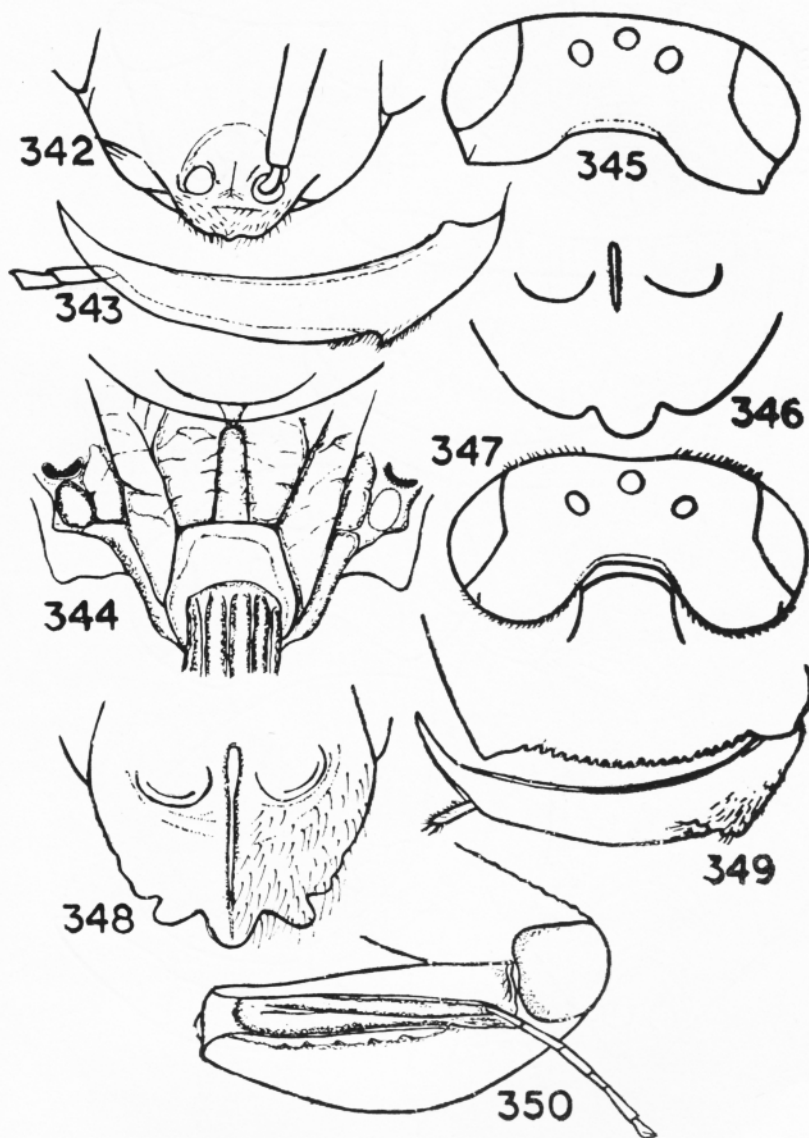
Figs.: 323-324: *Dirhinus pilifer* Boucek & Narend.: Female: 323, head; 324, forewing venation. 325: *altispina* Boucek & Narend.: Male: head dorsal view. 326: *madagascariensis* (Masi): Female: head profile. 327: *alticornis* (Masi): Female: head profile & antenna. 328-329: *hesperidum* (Rossi): Female: 328, head profile; 329, scutellum.



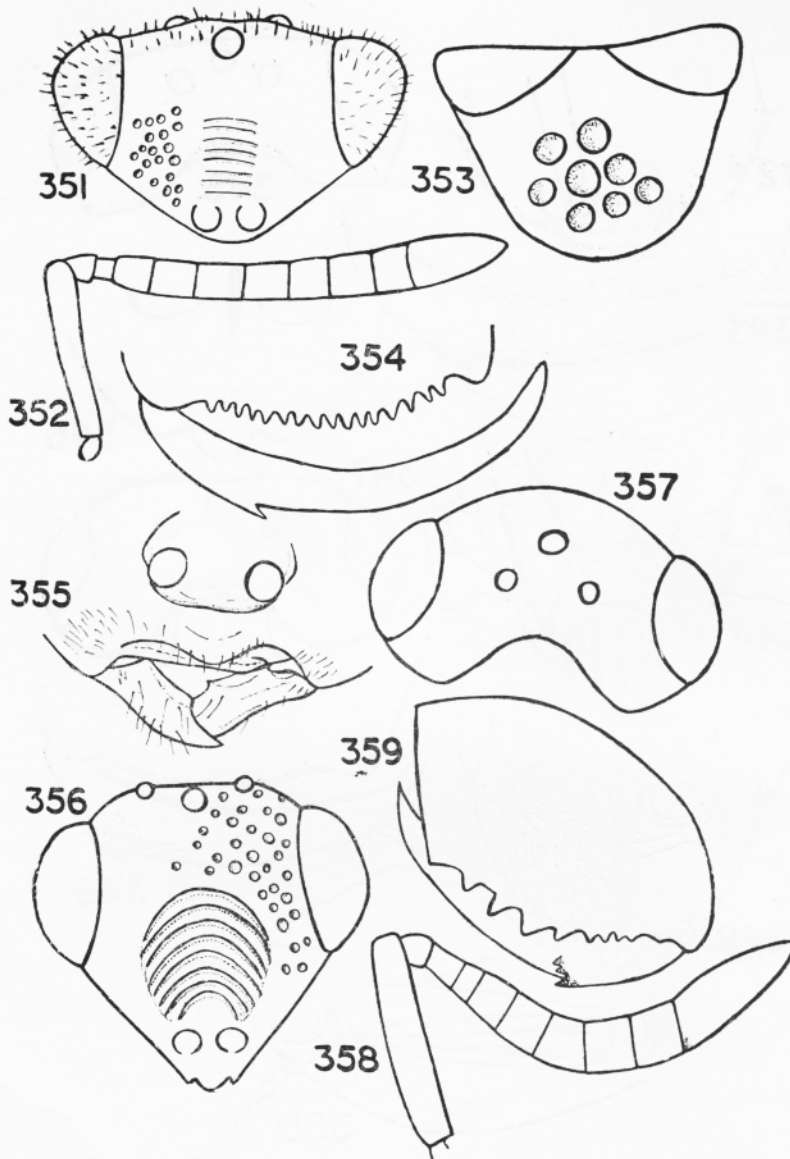
Figs. 330-335: *Dirhinus*. 330: *secundarius* (Masi): Female: propodeum, petiole & base of gaster. 331-334: *salinae* sp.nov. Female: 331, head dorsal view; 332, head profile; 333, antenna; 334, gaster. 335: *sureshani* sp.nov.: Female: head & body dorsal view.



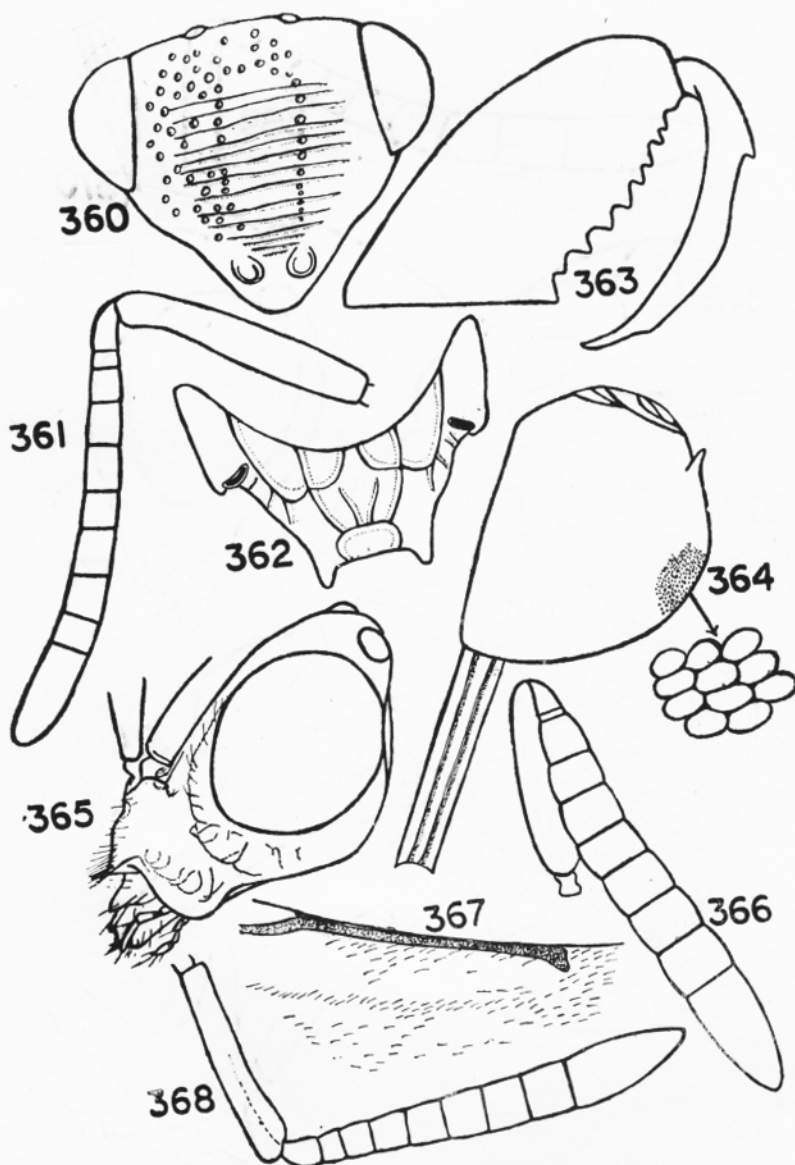
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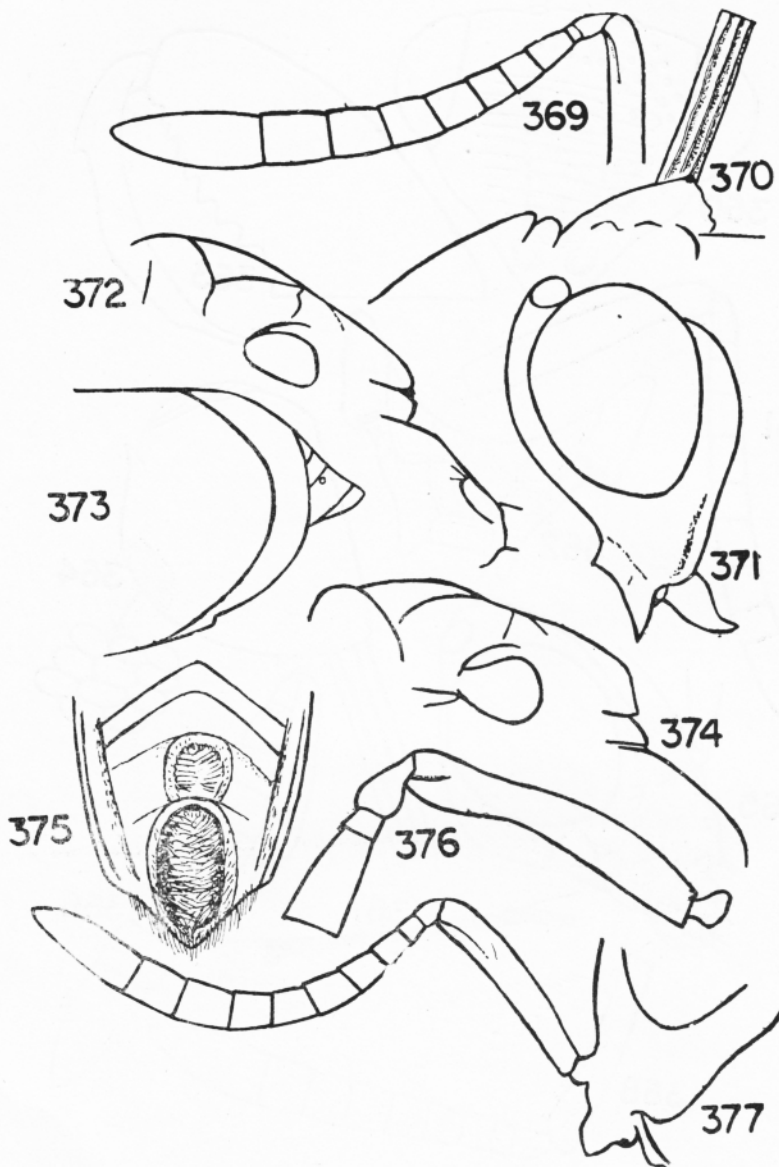
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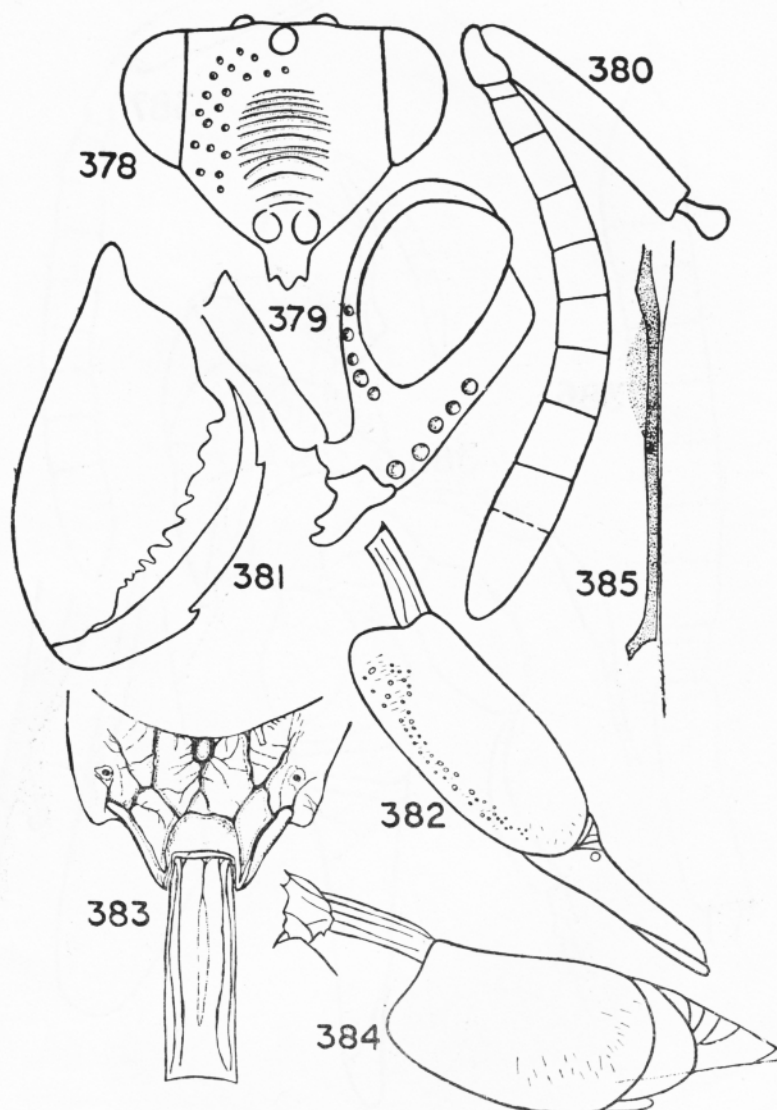
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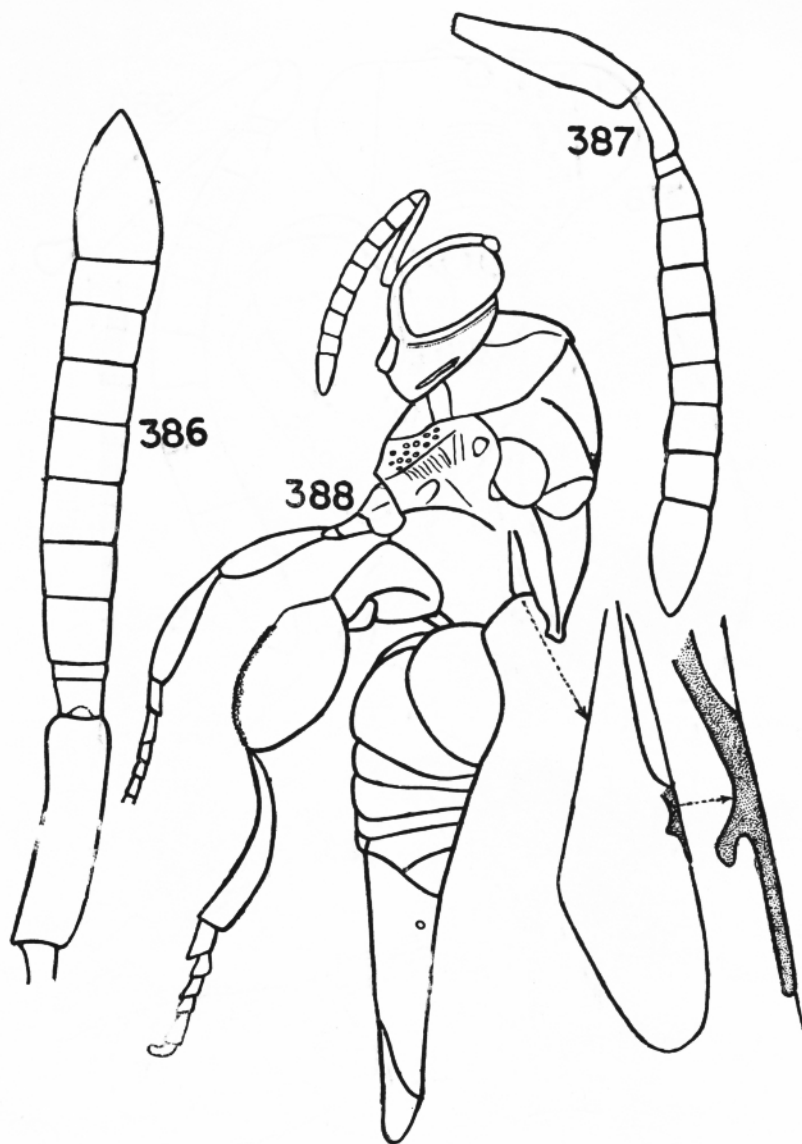
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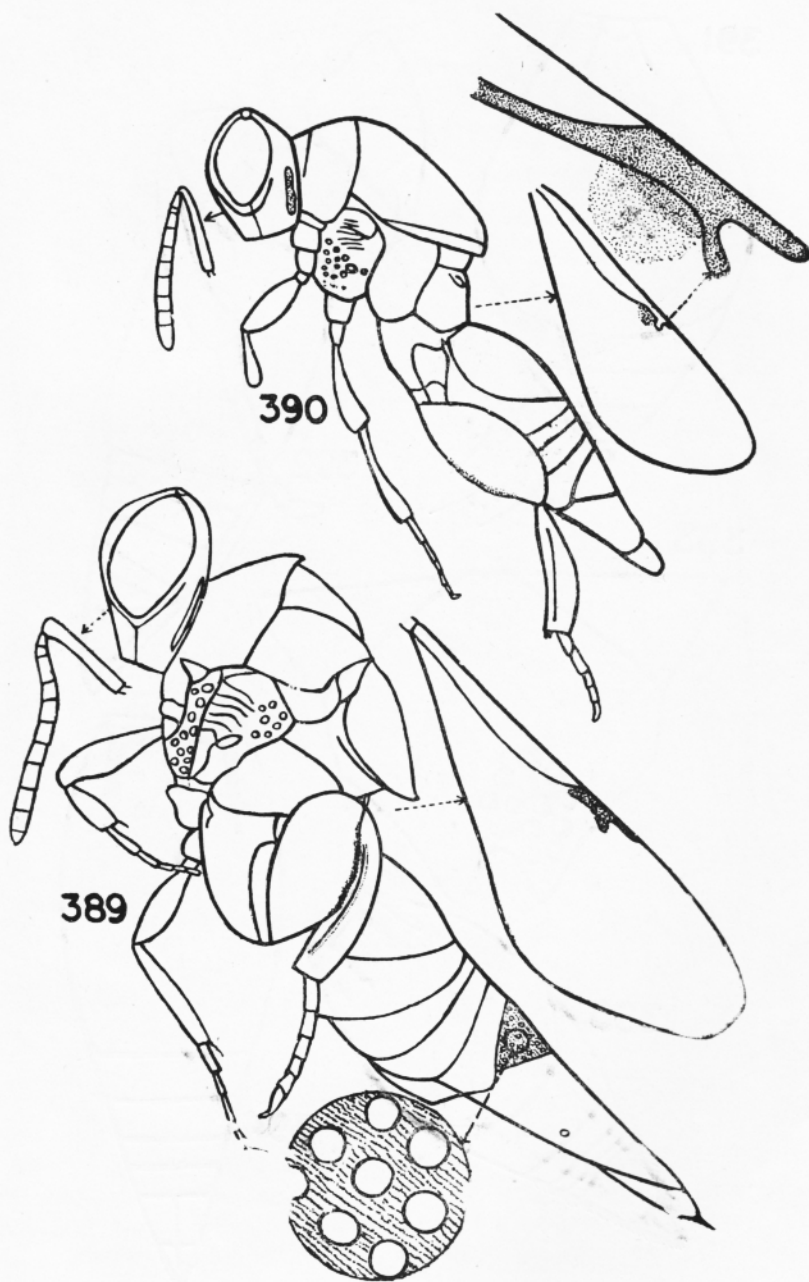
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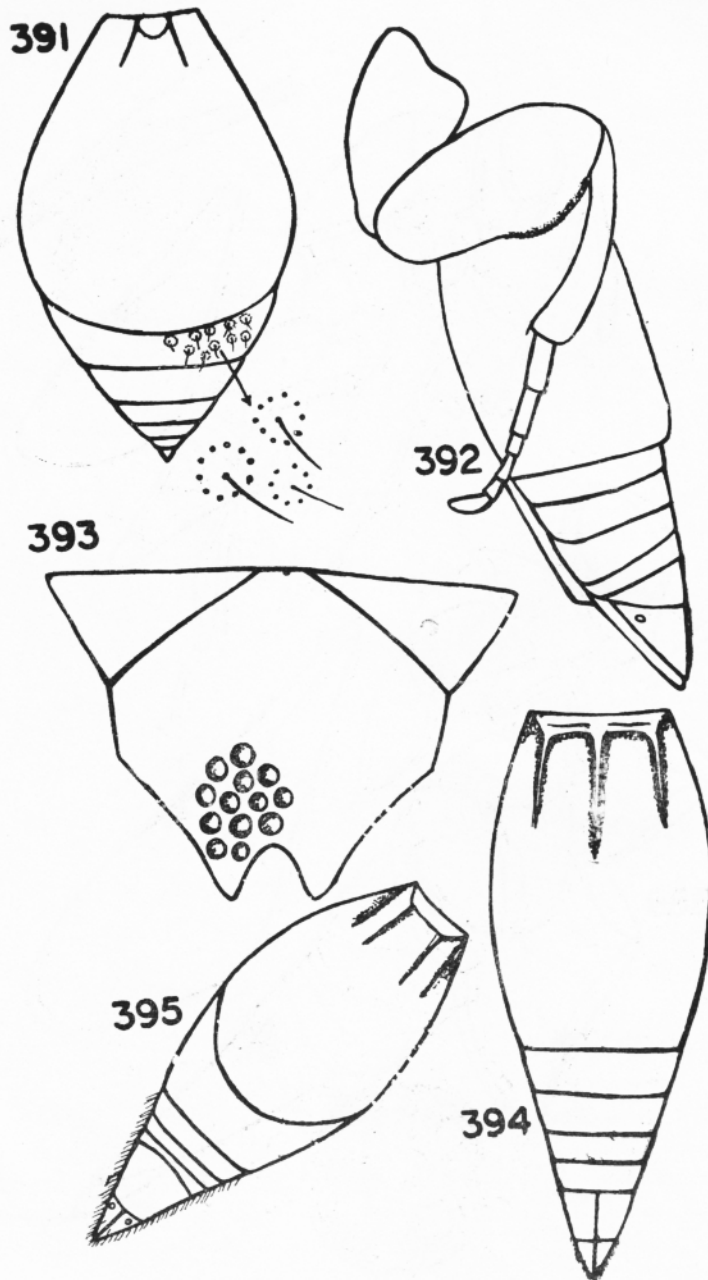
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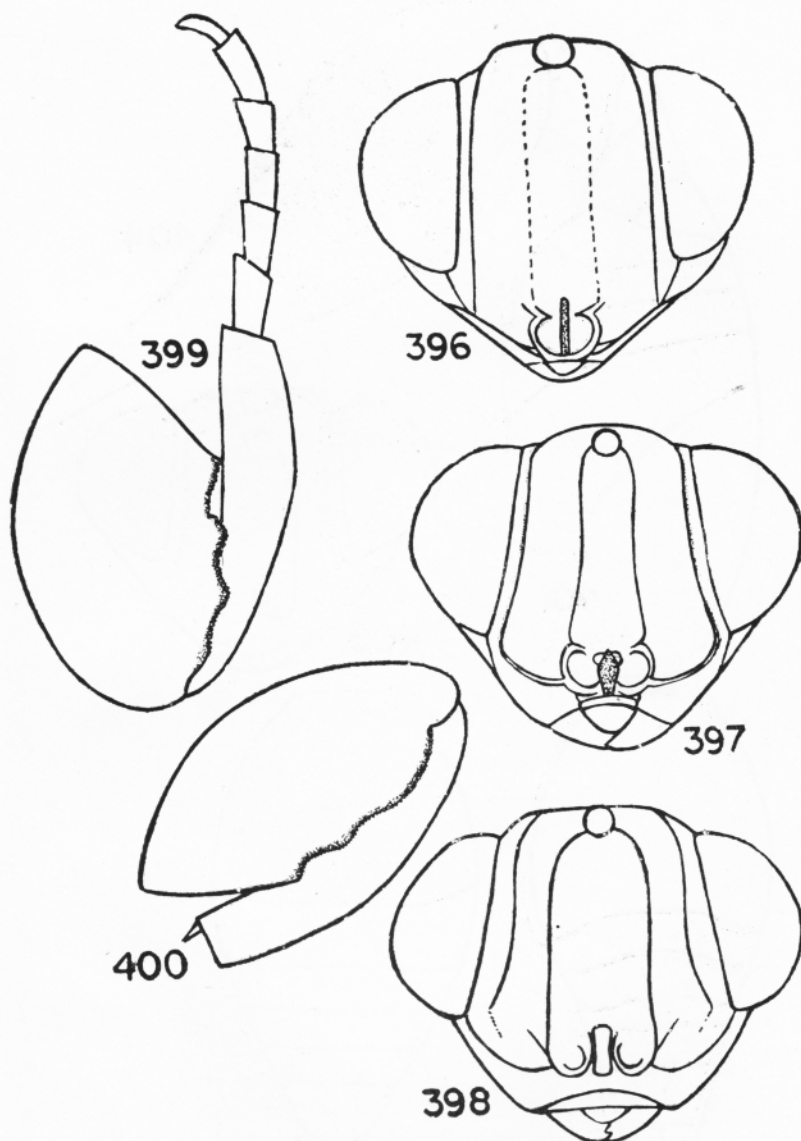
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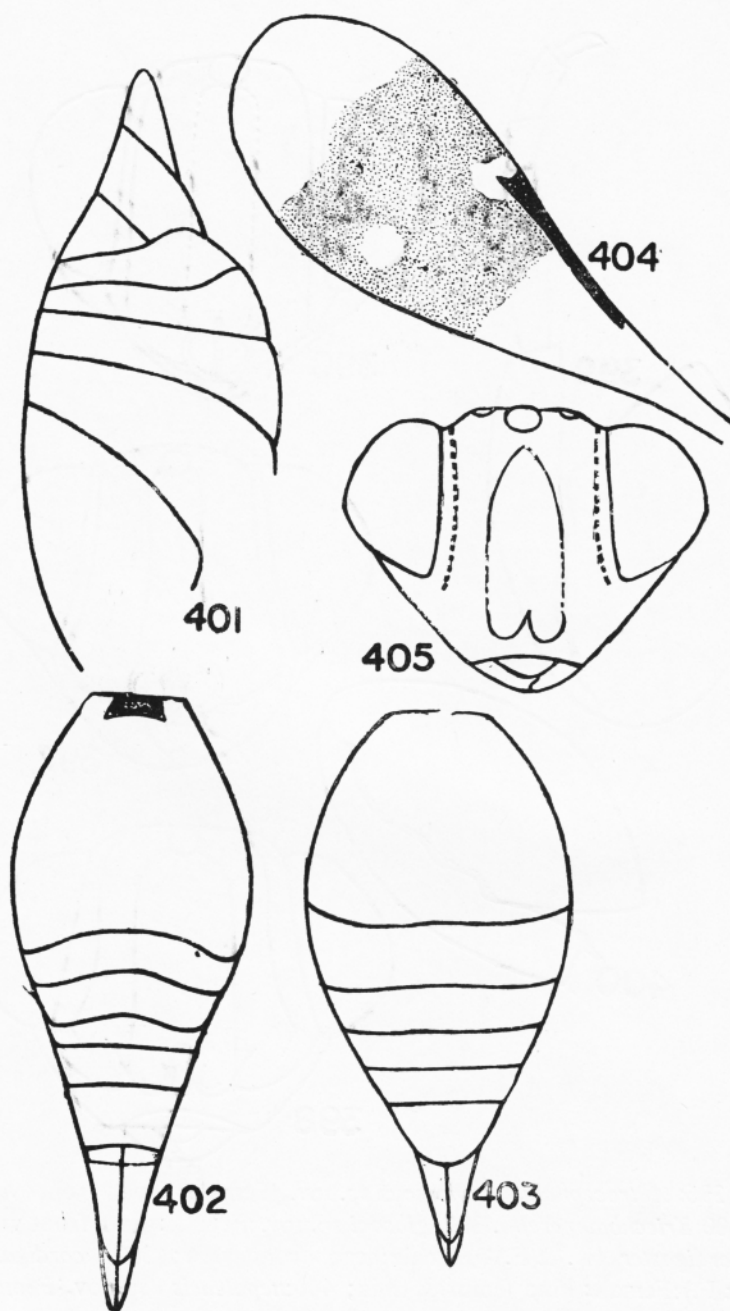
Figs.: 389-390: *Oxycoryphe*. 389: *thresiae* sp.nov.:Female:head & body;
390:*komui* sp.nov. Female:head & body.



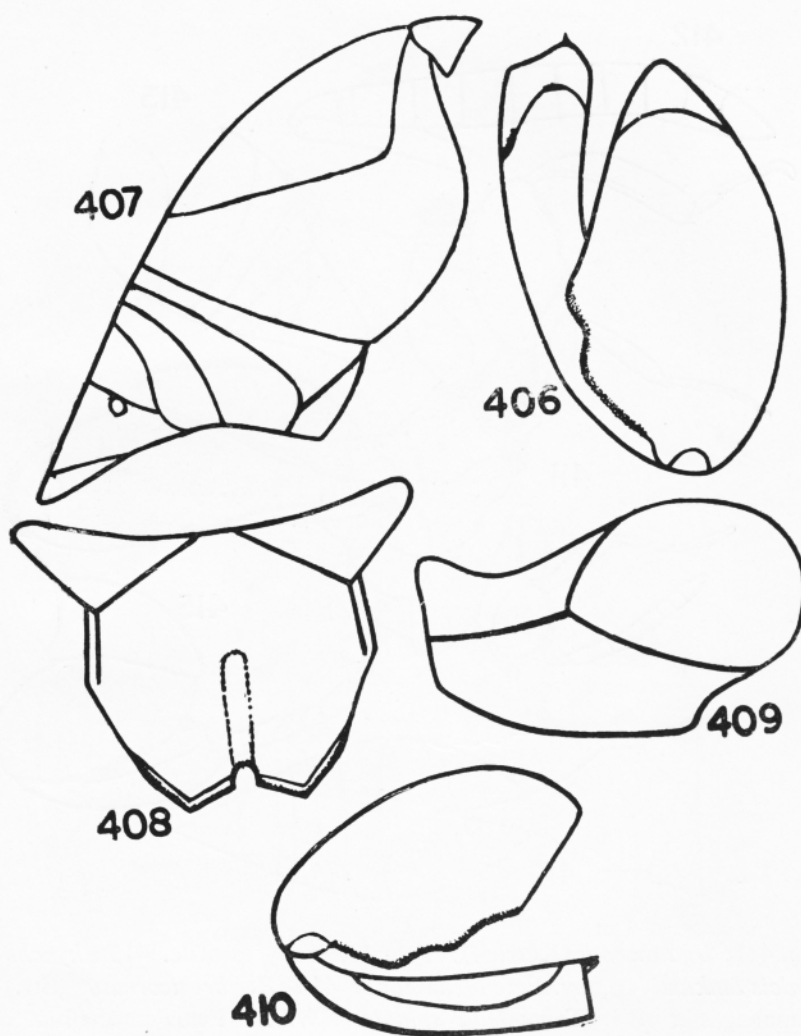
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Figs. 396: *Antrocephalus ceylonicus* sp.nov. Female: head front view.
 397-400: *Kriechbaumerella*. 397, *gibsoni* sp.nov.: Female: head front view:
 398: *cordigaster* (R. & F.): Female: head front view; 399, *cordigaster*
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 hind femur and tibia



Figs. 401-403: *Kriechbaumerella*. 401: *nepalensis* sp. nov. Female: gaster. 402: *javensis* sp. nov. Female: gaster dorsal view. 403: *titusi* sp. nov.: Female: gaster. 404-405: *Hockeria scutellata* sp. nov.: Female: 404, forewing; 405, head front view.



406-410: *Hockeria*. 406: *manii* sp.nov.: Female: hind femur & tibia. 407: *bangalorica* sp.nov.: Female: gaster profile. 408: *carinata* sp.nov.: female apex of scutellum, 409-410: *grisselli* sp.nov.: Female: 409, head profile; 410, hind femur & tibia.

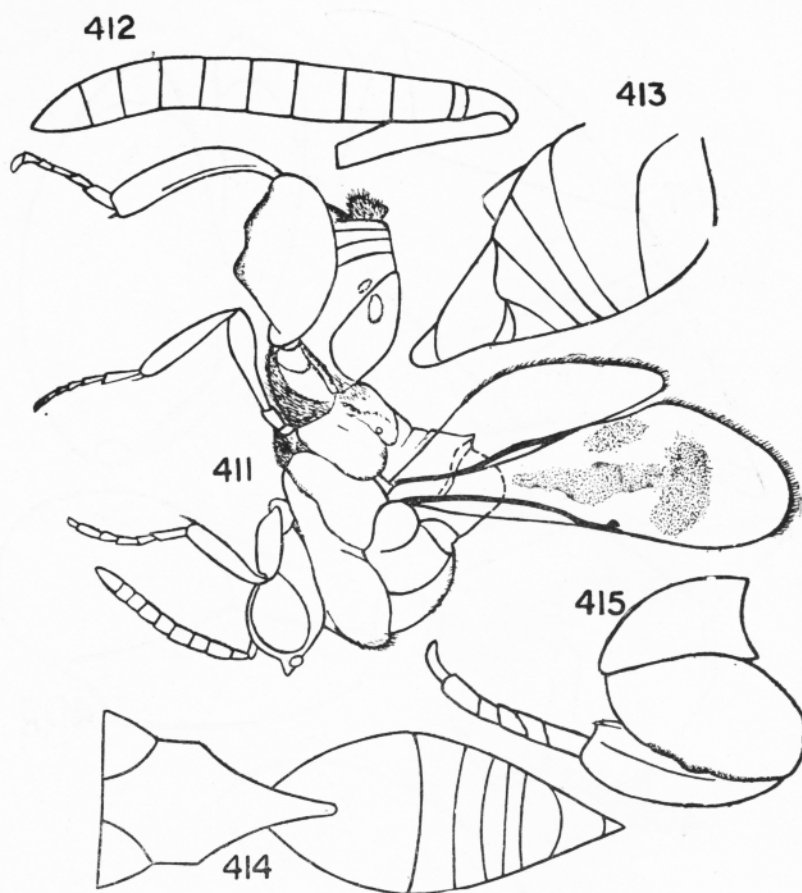
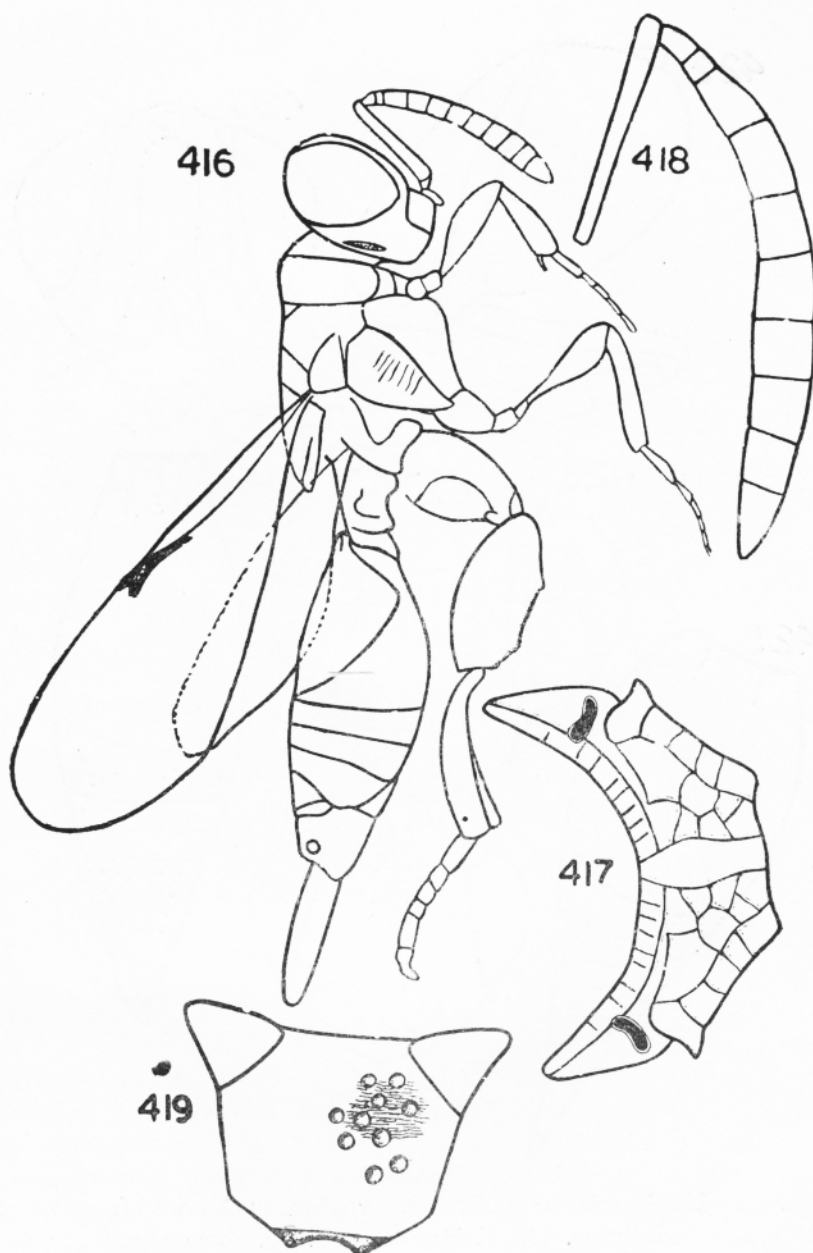
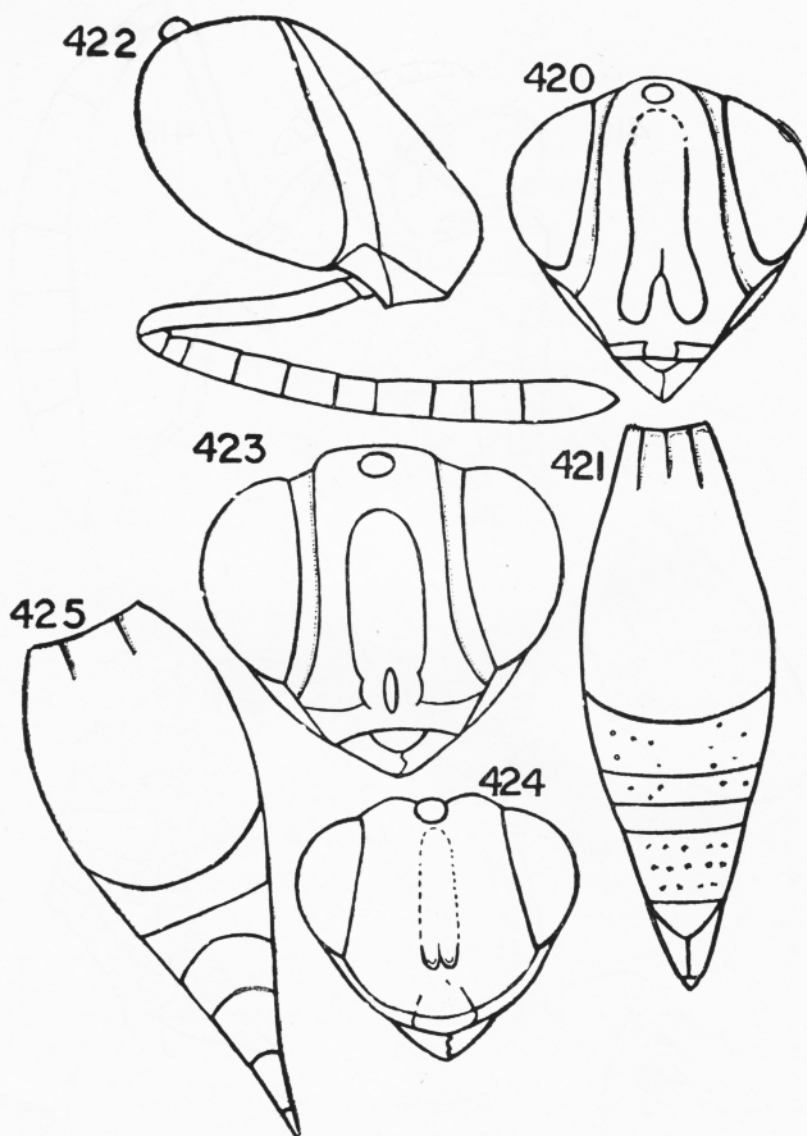


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Figs. 416-417: *Oxycoryphe*. 416, *nitida* (Cam.): Female body profile; 417, *edentata* sp.nov.: Female propodeum. 418-419: *Tanycoryphus shonus* sp.nov.: Female: 418, antenna; 419, apex of scutellum.



Figs. 420-421: *Thresiaella caudata* sp.nov.:Female:420, head front view; 421, gaster dorsal view. 422: *T. bicarinata* sp.nov.:Female:head profile. 423: *Sthulapada padata* sp.nov.:Female:head front view. 424-425; *Haltichella cinchonica* sp.nov.:Female:424, head front view; 425,gaster.

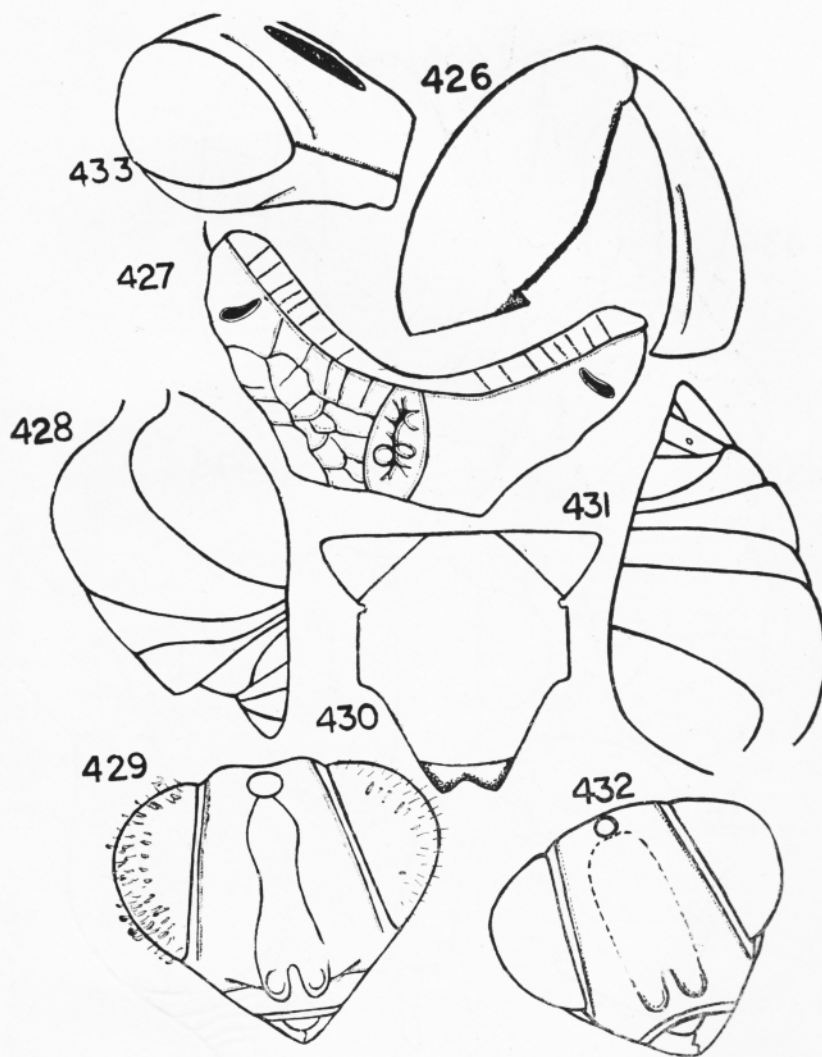
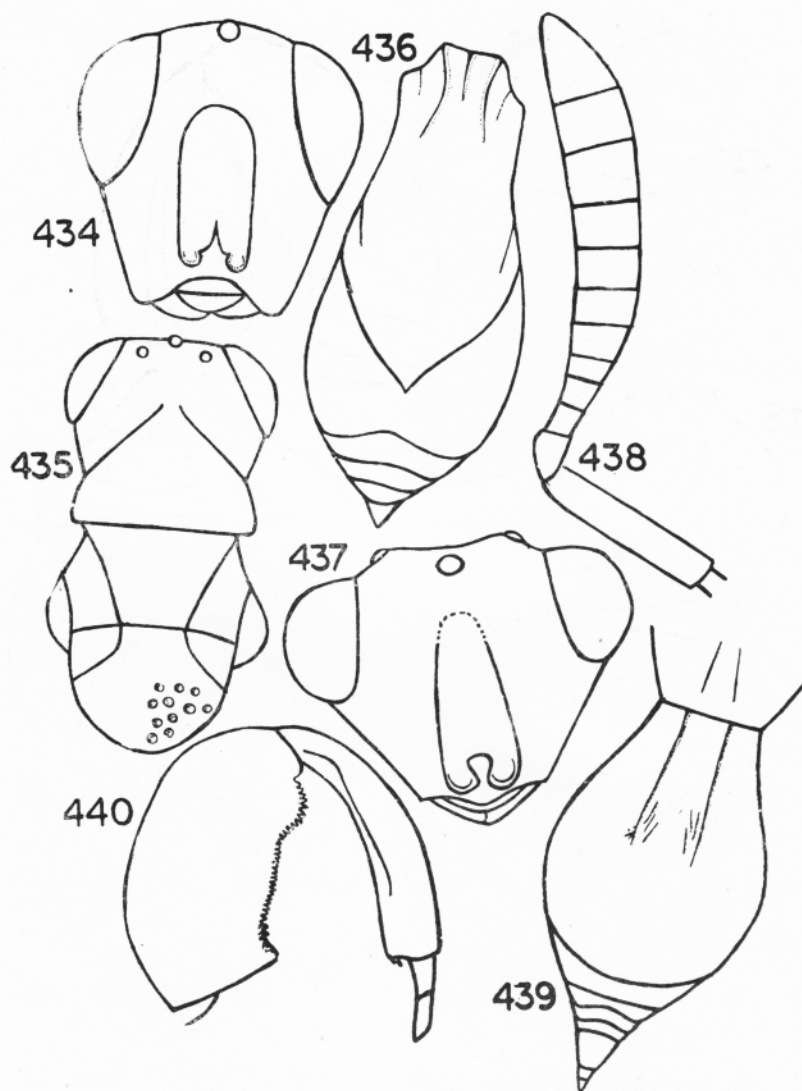
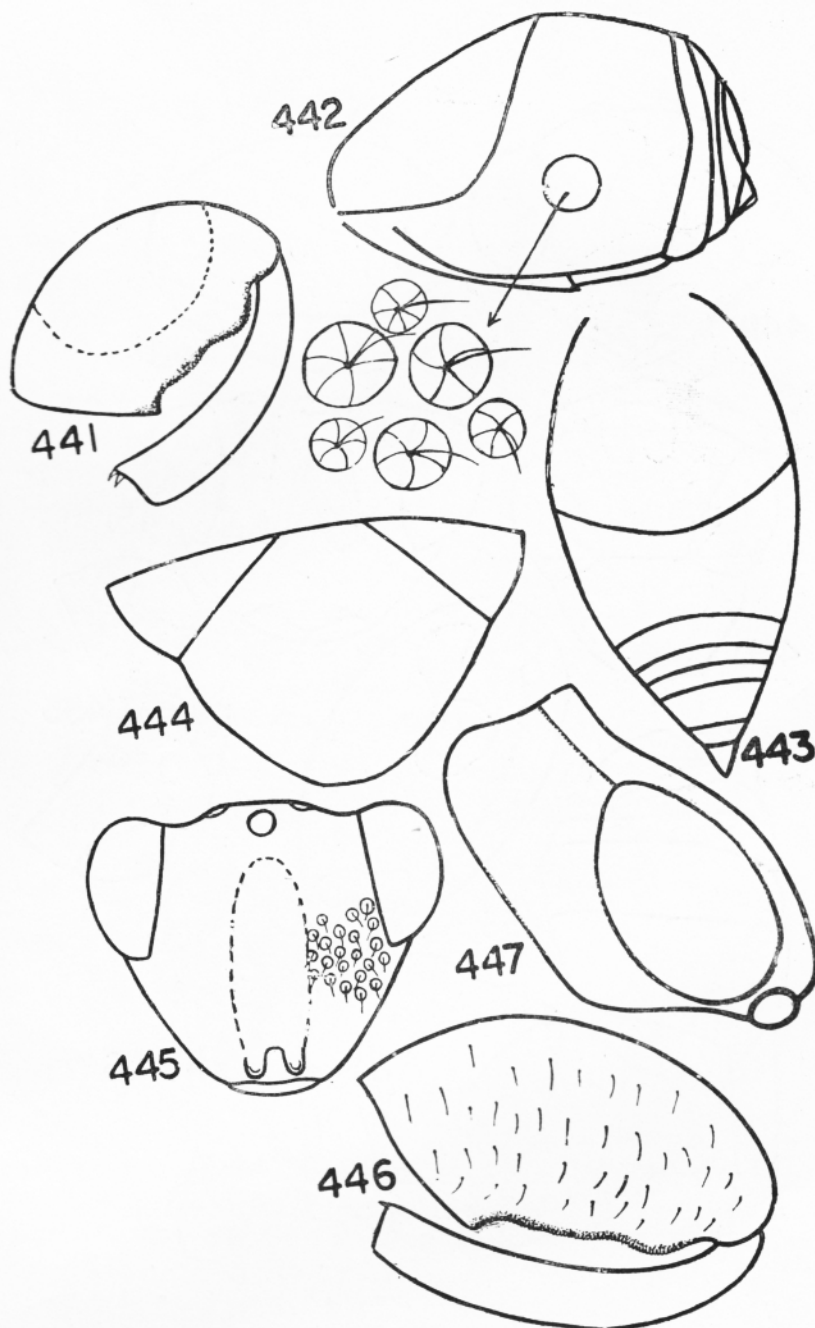


Fig. 426: *Haltichella variicolor* Masi: Female: hind femur & tibia. 327–433: *Neohaltichella*. 427–428: *thresiae* sp. nov.: Female: 427, propodeum; 428, gaster. 429–431, *nitigastrea* sp. nov. Female: 429, head; 430, apex of scutellum; 431, gaster profile. 432: *brevigena* sp. nov.: Female: head. 433: *nilgirica* sp. nov.: Female: head.



Figs.: 434-436: *Steninyreia anupama* sp.nov.:Female:434, head; 435, head & thorax dorsal view; 436, gaster. 437: *Hayatiella aligarhensis* sp. nov.:Female:head. 438-439: *Notaspidium*. 438, *bakeri* sp.nov.: Female: antenna; 439: *grisselli* Narend. : Female : gaster. 440: *Notaspidiella tirathabae* (Ferr.):Female:hind femur.



Figs.: 441-442: *Invreia anupama* sp.nov.:Female:441, hind femur and tibia; 442, gaster. 443-444: *Psilochalcis keralensis* sp.nov.:Female: 443, gaster; 444, apex of scutellum. 445-447: *Proconura*. 445-446: *asiatica* sp.nov.:Female 445, head front view; 446, hind femur & tibia. 447: *minusa* sp.nov.:Female:head profile.

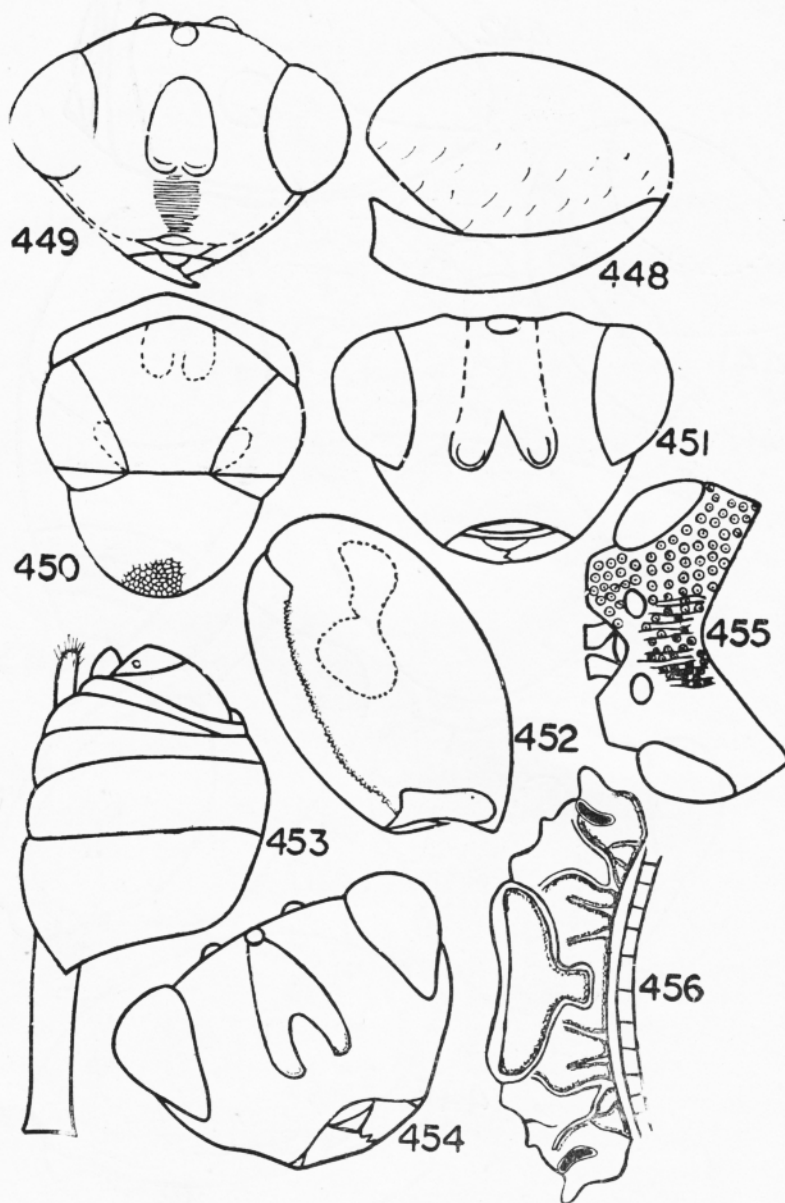
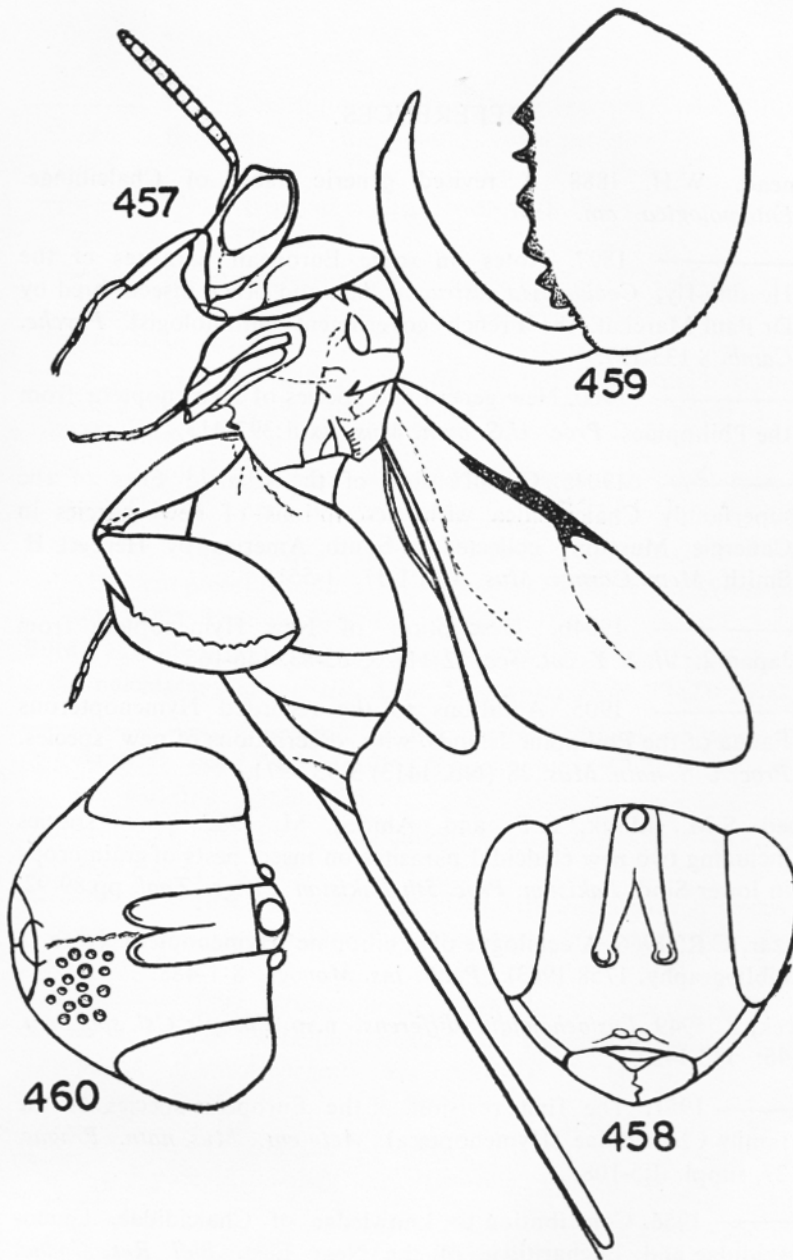


Fig. 448: *Proconura minusa* sp.nov.: Female: hind femur & tibia. 449-450: *Smicromorpha keralensis* Narend.: Male: 449, head; 450, thorax. 451-453: *Chalcis gibsoni* Narend.: Female: 451, head; 452, hind femur & tibia; 453, gaster. 454-456: *Trigonura nishidai* sp.nov.: Female: 454, head front view; 455, head dorsal view; 456, propodeum.



Figs.: 457: *Megachalcis carinata* (Stef).: Female: body profile. 458-459: *Trigonura townesi* sp.nov. Female: 458, head front view; 459, hind femur and tibia. 460: *Megalocolus anupamus* sp.nov. : Female : head front view.

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HOST—PARASITE LIST

1. ACRIDOMYIA SACHAROVII Stackelberg—Dipt.: Muscidae
Brachymeria tachardiae.
2. ADOXOPHYES CONGRUANA (Walker)—Lep.: Tortricidae.
Brachymeria lasus.
3. ADOXOPHYES ORANA (Fisher von Roesterstamm) Brachymeria
excarinata, B. lasus.
4. ADOXOPHYES PRIVATANA (Walker) :—Brachymeria lasus.
5. ALDRICHINA GRAHAMI (Aldrich)—Dipt.: Calliphoridae
Brachymeria podagrica
6. AMATHUSIA sp. (Lepido). :—B. olethria West.
7. AMBLYPALPIS OLIVIERELLA Ragonot—Lep.: Gelechiidae
Hockeria tamaricis
8. AMORBIA EMIGRATELLA Busck—Lep.: Tortricidae
Brachymeria lasus.
9. ANADEVIDIA PEPONIS (Fabricius)—Lep.: Noctuidae
Brachymeria lasus.
10. ANAPHAEIS AURATA Fabricius—Lep.: Pieridae:—Brachymeria
amphissa.
11. ANAPHAEIS MESENTINA (Cramer) :—Brachymeria lasus.
(New record).
12. ANOMIS FLAVA Fabricius.—Lep.: Noctuidae. :—Brachymeria.
lasus, B. kassalensis.
13. ANOMIS EROSA Hubner:—Brachymeria lasus
14. APANTELES LIPARIDIS Bouche—Hym.: Braconidae
Brachymeria secundaria.
15. APANTELES ORDINARIUS Ratzeburg:—Brachymeria secundaria
16. APANTELES PLUTELLAE Kurdjumov :—Brachymeria
excarinata, B. e. plutellae, B. apantelesi
17. APANTELES RUFICRUS Haliday:—Brachymeria lasus.
18. APANTELES TARAGAMAE Gahan:—Brachymeria nephantidis
19. APANTELES SPP. :—Brachymeria lasus
20. APORIA CRATAEGI (Linnaeus)—Lep.: Pieridae:—Brachymeria
lasus, B. minuta.

21. ARCHIPS ASIATICUS Walsingham, A. XYLOSTEANA (Linnaeus)—Lep.: Tortricidae :—Brachymeria lasus
22. ARCHIPS sp.:—Brachymeria excarinata, B. intermedia, B. lasus.
23. ARGYROPHYLAX NIGROTIBIALIS Barano — Dipt.: Tachinidae. :— Brachymeria lasus.
24. ARTONA CATOXANTHA (Hampson)—Lep.: Zygaenidae Dirhinus anthracia.
25. ASCOTIS sp.- Lep.: Geometridae :—Brachymeria lasus
26. ASPIDOMORPHA MILIARIS (Fabricius). Col.: Chrysomelidae Brachymeria burksi
27. ASURA CONFERTA Walker :—Brachymeria lasus
28. ATTEVA FABRICIELLA (Swederus)—Lep.: Yponomeutidae Brachymeria attevae, B. lasus, B. lugubris
29. AUTOGRAPHA NIGRISIGNA (Walker)—Lep.: Noctuidae Brachymeria lasus
30. BENA PRASINANA Linnaeus—Lep.: Noctuidae.:—Brachymeria lasus
31. BERCAEA HAEMORRHODIALIS (Fallen)-Dipt.:Sarcophagidae Brachymeria minuta, B. podagrica.
32. BLEPHARIPA sp.—Dipt.: Tachinidae :—Brachymeria fiskei
33. BOETTCHERISCA PEREGRINA (Robineau —Desvoidy)—Dipt.: Sarcophagidae :—Brachymeria podagrica.
34. BOMBYX MANDARINA Moore—Lep.: Bombycidae Brachymeria lasus
35. BORBO CINNARA (Wallace)—Lep.: Hesperiiidae :—Brachymeria lasus.
36. BRACHARTONA CATOXANTHA (Hampson)- Lep.: Zygaenidae:- Dirhinus anthracia
37. CALLIPHORA sp.—Dipt.: Calliphoridae:- Brachymeria minuta, B. podagrica
38. CALLIPHORA VILLOSA R—D. —Dipt.: Calliphoridae:- Dirhinus anthracia.
39. CALLITROGA sp. —Dipt.: Calliphoridae:- Brachymeria podagrica

40. CALOPEPLA LEAYANA (Latreille)—Col.: Chrysomelidae:-
Brachymeria calopeplae, B. excarinata
41. CALYMNOIDES CONCHYLIS (Guerin)—Lep.: Pyralidae:
Brachymeria lasus
42. CANEPHORA UNICOLOR (Hufnagel)—Lep.: Psychidae:-
Brachymeria lasus
43. CAPUA REYNOLDSIANA Swezey—Lep.: Tortricidae:-
Brachymeria lasus
44. CAREA SUBTILIS Walker—Lep.: Noctuidae:- Brachymeria
jambolana
45. CARCELIA sp. —Dipt.: Tachinidae:- Brachymeria fiskei
46. CASSIDA CIRCUMDATA Herbst—Col.: Chrysomelidae:-
Brachymeria menoni.
47. CASSIDA (NEBULOSA Linnaeus, NOBILIS Linnaeus,
RUBIGINOSA Muller var. RUGOSOPUNCTATA Motschulsky,
THAIS (Boheman) Brachymeria inermis
48. CATOPSILIA PYRANTHE Linnaeus—Lep.: Pieridae:-
Brachymeria lasus
49. CEPHRENES CHRYSOZONA (Plotz)—Lep.: Hesperidae:-
Brachymeria lasus
50. CEPHRENES MOSLEYI Butler:- Brachymeria lasus
51. CHAEROCAMPA sp. —Lep.: Sphingidae:- Brachymeria
kassalensis
52. CHAETOGAEDIA MONTICOLA Bigot—Dipt.: Tachinidae:-
Brachymeria lasus.
53. CHALCOCELIS ALBIGUTTATUS Snellen—Lep.: Limacodidae:-
Brachymeria euploae
54. CHAROPS BICOLOR (Szepligeti)—Hym.: Ichneumonidae:-
Brachymeria lasus
55. CHAROPS sp.: Brachymeria marmonti
56. CHRYSOBOTHRIS sp.—Col.: Buprestidae:- Trigonura
ruficaudis, T. tenuicaudis.
57. CHRYSODEIXIS CHALCITES Esper—Lep.: Noctuidae:-
Brachymeria lasus

58. **CHRYSOMYA** — **MEGACEPHALA** (Fabricius)—Dipt.:
Calliphoridae:- *Dirhinus himalayanus*
59. **CNAPHALOCROCIS MEDINALIS** (Guenee)—Lep. Pyralidae:-
Brachymeria excarinata
60. **COCCYGOMIMUS DISPARIS** Viereck—Hym.: Ichneumonidae:-
Brachymeria lasus
61. **COLEOPHORA LARICELLA** (Hubner)—Lep.: Coleophoridae:-
Spilochalcis xanthostigma
62. **COMPSOLECHIA METAGRAMMA** Meyrick—Lep.: Gelechiidae:-
Brachymeria excarinata, *B. lasus*
63. **CONTHEYLA ROTUNDA** Hampson—Lep.: Limacodidae:-
Antrocephalus hakonensis
64. **CORCYRA CEPHALONICA** (Stainton) Lep.: Pyralidae:-
Antrocephalus pandens, *Brachymeria attevae*, *Epitranus erythrogaster*.
65. **CREMASTUS (FLAVO—ORBITALIS** Cameron, **HAPALIAE** Cameron, **HYMENIAE** Cameron) Hym.: Ichneumonidae:-
Brachymeria lasus
66. **CRICULA** sp.—Lep.: Saturniidae:- *Brachymeria criculae*
67. **CROCIDOSEMA PLEBEJANA** Zeller—Lep.: Tortricidae:-
Brachymeria lasus
68. **CRYPSTHYRIS LONGICORNIS** (Stainton)—Lep.: Tineidae:-
Epitranus ramnathi
69. **CRYPSTHYRIS** sp.:— *Epitranus clavatus*
70. **CRYPTOPHLEBIA ILLEPIDA** (Butler)—Lep.: Tortricidae:-
Brachymeria lasus
71. **CRYPTOPHLEBIA OMBRODELTA**(Lower) Lep.: Tortricidae:-
Brachymeria minuta.
72. **CYDIA MOLESTA** (Busck)-Lep.: Tortricidae :—*Brachymeria excarinata*, *B. hime*.
73. **CYSTIDIA STRATONICE** Stoller-Lep.; Geometridae :—
Brachymeria lasus
74. **DACUS CUCURBITAE** Coquillett-Dipt.: Tephritidae :—
Dirhinus anthracia
75. **DACUS FERRUGINEUS** F. :— *Dirhinus anthracia*

76. DACUS INCISUS. :—Dirhinus bakeri(New record)
77. DACUS sp. :—Dirhinus auratus
78. DAIMIO TETHYS Menetries-Lep.: Hesperidae :—Brachymeria lasus
79. DANAUS ARCHIPPUS Fabricius ?-Lep.: Nymphalidae :—Brachymeria lasus
80. DANAUS CHRYSIPPUS Linnaeus :—Brachymeria albicrus, B. euploae, B. lasus, B. surekai
81. DANAUS PLEXIPPUS Linnaeus :—Brachymeria lasus
82. DASYCHIRA ARGENTATA Butler—Lep.: Lymantriidae :—Brachymeria fiskei, B. lasus.
83. DASYCHIRA THWAITESII Moore :—Brachymeria euploae, B. lasus.
84. DASYCHIRA sp. Brachymeria dunensis
85. DECADARCHIS SIMULANS (Butler)—Lep. : Tineidae :—Brachymeria lasus
86. DELIAS EUCHARIS Drury—Lep.: Pieridae :—Brachymeria indica.
87. DELIAS sp. :—Brachymeria lasus. B. megaspila.
88. DENDROLIMUS SPECTABILIS Butler—Lep.: Lasiocampidae:—Brachymeria lasus, B. minuta.
89. DIACRISIA OBLIQUA Walker—Lep.: Arctiidae :—Brachymeria compestris
90. DIAPHANIA spp. :—Brachymeria lasus.
91. DICHOCROCIS PUNCTIFERALIS Guenee—Lep.: Pyralidae Brachymeria lasus
92. DIAPHANIA INDICA (Saunders)—Lep.: Pyralidae. :—Brachymeria excarinata, B. lasus, B. margaroniae
93. DIORYCTRIA SPLENDIDELLA (Herrich—Schaffer)—Lep.: Pyralidae: Brachymeria nosatoi
94. DISCHIDESIA MELANOLOPHA Swinhoe—Lep.: Geometridae Brachymeria lasus
95. DOLESCHALLIA HEXOPHTHALMOS Guerin — Lep. : Nymphalidae. Brachymeria lasus

96. EARIAS BIPLAGA Walker—Lep.:Noctuidae :—Brachymeria minuta
97. EARIAS CUPREOVIRIDIS Walker :—Brachymeria lasus.
98. EARIAS FABIA :—Brachymeria bengalensis (New record).
99. EARIAS INSULANA Boisduval :—Brachymeria lasus, B. tachardiae.
100. EARIAS VITELLA (Fabricius) :— Brachymeria lasus, B. tachardiae.
101. EARIAS sp. :—Brachymeria amphissa, B. bengalensis pulchellae.
102. ECPHOROPSIS PERDISTINCTUS :—B. excarinata Gah.(New record) B. apicicornis (New record)
103. ELYMNIAS (HYPERMNESTRIA Moore, NIGRISCENS Moore) Lep.:Nymphalidae Brachymeria lasus
104. ENICOSPILUS STRIOLATUS (Townes, Townes & Gupta) Hym.: Ichneumonidae : Brachymeria lasus
105. EPHIALTUS CAPULIFERA (Kriechbaumer) Hym.: Ichneumonidae. :—Brachymeria lasus
106. EPILACHNA sp. Col.:Coccinellidae :—Uga menoni
107. ERGOLIS MERIONE Cramer-Lep.: Nymphalidae :— Brachymeria lasus
108. ERIONOTA THRAX Linnaeus Lep.:Hesperiidae :—Brachymeria albotibialis, B. euploae, B. lasus, B. thracis
109. EUBLEMMA AMABILIS Moore-Lep. : Noctuidae:— Brachymeria tacharidae
110. EUMETA CRAMERII (Westwood) - Lep.: Psychidae:— Brachymeria carinata
111. EUMETA MINUSCULA (Butler) :—Brachymeria fiskei, B. lasus, B. podagrica.
112. EUMETA PRYERI Leech. :—Brachymeria lasus.
113. EUPHYDRYAS PHAETON Drury-Lep. : Nymphalidae :— Brachymeria intermedia.
114. EUPLOEA CORE Cramer - Lep. : Nymphalidae :— Brachymeria euploae, B. lasus.

115. EUPLOEA LEUCOSTICTOS Butler :—*Brachymeria lasus*
116. EUPOECILIA AMBIGUELLA (Hubner)-Lep. : *Cochylidae*. :—*Brachymeria minuta*
117. EUPROCTIS (CHRYSORRHOEA) (Linnaeus), PHAEORRHOEA (Donovan), SIMILIS Fuessly, PSEUDOCONSPERSA (Strand)-Lep. : *Lymantriidae*. :—*Brachymeria lasus*.
118. EUPROCTIS FLAVA Bremer. :—*Brachymeria lasus*, B. - *secundaria*.
119. EUPROCTIS FRATERNA Moore :—*Brachymeria lasus*
120. EUREMA BLANDASILHETANA Wallace-Lep.: *Pieridae* *Brachymeria megaspila*.
121. EUREMA HECABE Linnaeus. :—*Brachymeria lasus*, B, *megaspila*.
122. EUZOPHERA PERTICELLA Ragonot-Lep.: *Pyalidae*. :—*Epitranus perticellus*.
123. EUZOPHERA sp. :—*Antrocephalus cariniaspis*.
124. EXELASTIS ATOMOSA Walshm - Lep. : *pterophoridae* *Brachymeria* sp.
125. GABALA ARGENTATA Butler - Lep. : *Noctuidae*. :—*Brachymeria lasus*.
126. GALLERIA MELLONELLA L. :—*Antrocephalus galleriae*
127. GLYPHODES PYLOALIS (Walker)- Lep.: *Pyalidae*. :—*Brachymeria excarinata*, B. *lasus*.
128. GRAPHIUM AGAMEMNON (Linnaeus)-Lep.: *Papilionidae* *Brachymeria jamboana*, B. *semirufa*
129. HEDYLEPTA (BLACKBURNI) (Butler), MONOGONA (Meyrick) -Lep.: *Pyalidae* :—*Brachymeria lasus*.
130. HELIOTHIS ARMIGERA (Hubner)-Lep. : *Noctuidae*. :—*Brachymeria lasus*, B. *secundaria* (Rushka) (New record)
131. HEMEROCAMPA LEUCOSTIGMA Smith-Lep.: *Lymantriad* *Brachymeria intermedia*.
132. HESTINA JAPONICA Felder & Felder - Lep : *Nymphalidae* *Brachymeria lasus*.
133. HETEROCAMPA GUTTIVITTATA (Walker) - Lep.: *Notodontidae*. *Brachymeria intermedia*

172. *OECOPHYLLA SMARAGDINA* Fabricius-Hym:- Formicidae, *Smicromorpha keralensis*.
173. *OPISINA ARENOSELLA* Walker - Lep.: Oecophoridae: -- *Antrocephalus cariniceps*, *A. hakonensis*, *A. phaeospilus*, *Brachymeria amphissa*, *B. euploae*, *B. excarinata*, *B. atteviae*, *B. lasus*, *B. nephantidis*, *B. nosatoi*, *B. podagrica*,
174. *OPODIPHTHERA SIMPLEX* Walker - Lep.: Saturnidae:—*Brachymeria euploae*
175. *ORETA CARNEA* Butler-Lep.: Drepanidae:—*Brachymeria euploae*.
176. *ORGYIA POSTICA* Walker-Lep.: Lymantridae:—*Brachymeria lasus*.
177. *OSTRINIA NUBILALIS* (Hubner) - Lep.; Pyralidae:—*Brachymeria euploae*. *B. lasus*.
178. *OXYODES SCROBICULATA* Fabricius-Lep. Noctuidae:—*Brachymeria euploae*.
179. *PAPILIO POLYTES* Linnaeus-Lep.: Papilionidae:—*Brachymeria lasus*.
180. *PARASARCOPHAGA AURIFRONS* (Macquart) - Dipt.: Sarcophagidae:—*Dirhinus anthracia*.
181. *PARASARCOPHAGA CRASSIPALPIS* (Macquart), *P. TUBEROSA* (Pandella):—*Dirhinus himalayanus*.
182. *PARASARCOPHAGA HARPAX* (Pandella), *P. HIRTIPES* (Wiedemann):—*Brachymeria minuta*.
183. *PARNARA GUTTATA* Bremer & Grey-Lep.: Hesperidae:—*Brachymeria lasus*.
184. *PECTINOPHORA GOSSYPIELLA* (Saunders)-Lep.: Gelechiidae-*Brachymeria lasus*, *B. nephantidis* (New record).
185. *PELOPIDAS MATHIAS* (Fabricius)-Lep.: Hesperidae:—*Brachymeria albotibialis*, *B. excarinata*, *B. jayaraji*, *B. lasus*, *B. nigricorporis*.
186. *PERICYMA CRUEGERI* (Butler)-Lep.: Noctuidae:—*Brachymeria albotibialis*, *B. lasus*
187. *PERINA NUDA* Fabricius-Lep.: Lymantriidae:—*Brachymeria croceogastralis*, *B. euploae*, *B. lasus*.

188. PETROVA CRISTATA (Walsingham) - Lep.: Tortricidae:—
Brachymeria nosatoi.
189. PHTHONANDRIA ATRILINEATA (Butler)-Lep.:Geometriidae.
Brachymeria lasus.
190. PIERIS BRASSICAE Linnaeus - Lep.:Pieridae:—Brachymeria
rufogasteri.
191. PIERIS CANIDIA (Sparrman):—Brachymeria lasus.
192. PIERIS RAPAE Linnaeus:—Brachymeria lasus, B. ornatipes.
193. PLECOPTERA REFLEXA Guenee-Lep.:Noctuidae:—Brachymeria
lasus, B. mathuri, B. nursei, Dirhinus anthracia.
194. PLUSIA FESTATA Craesar-Lep. Noctuidae:—Brachymeria
lasus.
195. PLUTELLA XYLOSTELLA (Linnaeus)-Lep.: Yponomeutidae:—
Brachymeria excarinata, B. phya., B. marmonti.
196. POLYCHROSIS BOTRANA (Denis & Schiffermuller)-Lep.:
Tortricidae. Brachymeria minuta, B. secundaria.
197. PONTIA DAPLIDICE Linnaeus (extralimital)-Lep: Pieridae:—
Brachymeria ornatipes.
198. PORTHETRIA sp:—Brachymeria porthetrialis, B. alternipes
(New record).
199. PORTHETRIA DISPAR (Linnaeus)-Lep.: Lymantriidae:—
Brachymeria fiskei, B. intermedia, B. lasus, B. minuta, B.
podagrica, B. porthetrialis, B. secundaria.
200. PRODENIA sp: Lep. Noctuidae:—Brachymeria prodeniae.
201. PSARA sp.-Lep.:Pyralidae:—Brachymeria euploae.
202. PTEROMA PLAGIOPHLEPS Hampson-Lep.: Psychidae:—
Brachymeria marmonti
203. PYRAUSTA MACHAERALIS (Walker)-Lep.: Pyralidae:—
Brachymeria euploae, B. attevae, B. lasus, Dirhinus anthracia,
Hockeria tristis
204. PHYCODES RADIATA (Pyralidae):- Antrocephalus hypsiphyllae.
205. PYRODERCES SIMPLEX Wlsm. (Tineidae):—Brachymeria
olethria.

206. RAVINIA STRIATA (Fabricius) - Dipt.: Sarcophagidae:—
Brachymeria minuta.
207. RONDOTIA MENCIAANA Moore - Lep.: Bombycidae:—
Brachymeria lasus.
208. SARCOPHAGA ANNIFRONS M.—Dipt.:Sarcophagidae:—
Dirhinus anthracia.
209. SARCOPHAGA TUBEROSA:—Dirhinus himalayanus.
210. SARCOPHAGA MINISERA Walker:—Brachymeria podagrica.
211. SARCOPHAGA MULTICORNIS:—Brachymeria podagrica.
212. SARGUS METALLINUS (Fabricius)-Dipt.: Stratiomyidae:—
Dirhinus bakeri.
213. SIMPLICIA ROBUSTALIS Guenee - Lep.: Noctuidae :—
Brachymeria lasus, B. nursei.
214. SPARGANOTHIS sp. - Lep.: Tortricidae :—Brachymeria
podagrica.
215. SPILOSOMA OBLIQUA Walker-Lep.:Arctiidae:—Brachymeria
compestris, B. rufotibialis, Hockeria nikolskayae.
216. SPILOSOMA SUBCARNEA Walker;—Brachymeria lasus.
217. SPILOSOMA sp. :—Dirhinus anthracia
218. SPODOPTERA EXIGUA Hubner - Lep.: Noctuidae :—
Brachymeria lasus.
219. STURMIA MACROPHALLUS:—Brachymeria scutellocarinata
(New record).
220. SYLEPTA DEROGATA (Fabricius) - Lep.: Pyralidae :—
Brachymeria kassalensis, B.lasus,Dirhinus madagascariensis,
B. olethria
221. SYNTHESIOMYI NUDISETA (Van der Wulp) - Dipt.:
Muscidae :—Brachymeria podagrica.
222. TELICOTA BAMBUSAE Moore-Lep.: Hesperidae:—
Brachymeria euploeae.
223. TETRASTIA METICULOSALIS Guen. Lep.: Pyralidae:—
Antrocephalus hypsiphyllae
224. THYSANOPLUSIA ORICHALCEA Fabricius - Lep.:
Noctuidae :—Brachymeria lasus.

225. *TORTRIX VIRIDANA* Linnaeus - Lep.: Tortricidae. :—
Brachymeria minuta.
226. *TORTRIX* sp.:—*Brachymeria lasus*.
227. *TRICHOPLUSIA NI* Hubner -Lep.: Noctuidae :—*Brachymeria*
intermedia, *B. lasus*.
228. *TYRIA JACOBABAEAE* Linnaeus-Lep.: Arctiidae :—*Brachymeria*
minuta.
229. *URODERMIS TRIGRAPHA* Meyrick Lep.: Tortricidae:—
Brachymeria lasus, *B. excarinata*.
230. *UTETHEISA PULCHELLA* Linnaeus - Lep.: Arctiidae:—
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231. *VAGA BLACKBURNI* (Tuelly)-Lep.: Lycaenidae:—*Brachymeria*
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232. *VIRACHOLA ISOCRATES* Fabricius - Lep.: Lycaenidae :—
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233. *YPONOMEUTA EVONYMELLA* (Linnaeus) - Lep.:
Yponomeutidae.—*Brachymeria lasus*.
234. *YPONOMEUTA MALINELLA* Zeller :—*Brachymeria fiskei*,
B. miuuta, *B. podagrica*.
235. *YPSOLOPHUS OCHROPHANES* Meyrick Lep.: Gelechiidae:—
Antrocephalus vitatus, *Brachymeria apicicornis* (New record).
236. *ZEUZERA* sp. -Lep.: Cossidae. :—*Brachymeria margaroniae*
237. *ZYGAENA FILIPENDULAE* Linnaeus - Lep.: Zygaenida:—
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238. *ZYGAENA TRIFOLII* Esper:—*Brachymeria minuta*.

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ERRATA

- 1) Page 6: line 4 from top, read *anterior* view instead of *dorsal* view
- 2) Page 21: couplet 20, second alternate: line 2, read distal lobe not so *prominent* as above, instead of distal lobe not so *long* as above
- 3) Page 21: couplet 22, line 3, read postorbital carinae *irregular and running upwards* and gaster as in figure 33, instead of postorbital carinae and gaster as in figure 33.
- 4) Page 59: lines 3 & 4 from below, read a distinct additional auricular *carina* on either side present, instead of a distinct additional auricular on either side present.

ADDENDUM

1. Though the publication containing the descriptions of the new taxa *Tanushyama*, *Tanushyama anupama* and *Notaspidium bakeri* was sent to the journal 'Bio-Science Research Bulletin' in 1987 I have received the copy of the journal (Vol-2(1-2) p.46-49, 1986) only on 25-4-1989. I have not received any reprint of the paper till this monograph is sent to press so far. Hence the date of publication of these three new taxa must be considered as 25.4.1989, the date on which I received the copy of the journal. Because of the above reason, the genus *Tanushyama* Narendran becomes a new synonym of *Steninyreia* Boucek (1988).
2. The following two references should also be added under 'References':
 1. Narendran, T.C. 1989. New Chalcid wasps (Hymenoptera: Chalcididae) from Mindanao (Philippines). *Bio-Science Research Bulletin* 2(1-2):46-49.
 - 2) Cresson, E.T. 1865. On *Brachymeria incerta*. *Proc. Ent. Soc., Philadelphia*, 4:101.